Switching on Smart Rwanda: Digital inclusion, collaboration and a G5 mindset

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Acknowledgments

Foreword

I take great pleasure in introducing this series of Collaborative Regulation Country Case Studies. They provide a high-value, authoritative analysis of the regulatory landscape and offer a step-by-step pathway to our members as they progress towards their G5 destination.

The case studies reflect the journeys undertaken by selected countries from different regions as they analyse their regulatory and institutional frameworks and advance towards more collaborative governance. Each captures a unique, diverse experience of policy that enables decision-makers to explore both the challenges and opportunities that collaborative regulation offers in our journey towards inclusive digital transformation. Each case study generates discussion – and invites a better understanding of the role and impact of collaborative governance and on new tools for regulating digital markets.

Our case study approach is highly collaborative, thorough, tightly structured and inclusive, through an extensive fact-finding questionnaire and one-on-one interviews with key national stakeholders. They elicit views on the future facing G5 regulation and on drivers for regulatory evolution.

The case study lays out the country's regulatory landscape and points both to existing best practice and to areas for future progress. In addition, a high-level policy brief for ICT policy-makers provides a clear view of the value and benefits of collaborative regulation together with its challenges and solutions.

The library of collaborative regulation case studies, launched at the Global Symposium for Regulators 2021 (GSR-21), will expand to include additional country experiences. We are integrating insights from this process into a global project on the transition to collaborative regulation, which will be launched at the upcoming WTDC.

These case studies sit alongside the G5 Benchmark – the gold standard tool that fast-tracks countries along the path of collaborative, cross-sectoral regulation. The 2021 updated, G5 Benchmark provides an actionable and precise country readout on progress towards G5 collaborative regulation.

The case studies are an important element in a major global effort by ITU to measure the impact and the many benefits of G5 collaborative regulation. For more than twenty years now, we – ITU and our partners in the global regulatory community – have made enormous progress in analysing, mapping and understanding the changing role that regulation plays in society and in economies. This two-decade-long investment is increasingly bearing fruit – and is now offering a clear-eyed view of the path ahead for all countries, no matter where they are, in their journey towards G5 regulation. These country case studies are an important element in this larger, ongoing body of work and mark a step forward on our journey to achieving the Sustainable Development Goals (SDGs) and digital transformation.

I hope that the Collaborative Regulation Country Case Studies together with our regulatory metrics and tools will prove invaluable to many different types of readers, but especially to ICT regulators and policy-makers in all regions.

Doreen Bogdan-Martin
Director, ITU Telecommunication Development Bureau

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1   Executive summary

According to the ICT Regulatory Tracker, Rwanda is a fourth-generation (G4) regulator. As a country that has put ICTs at the centre of its development since 2000, Rwanda has duly earned its recent entry into the small but growing club of African countries to be rated at the G4 level. G4 is characterized by integrated regulation, led by economic and social policy goals. G5, which is well within Rwanda's grasp, has the important additional aspect of deep and meaningful collaboration as a means of achieving development-oriented digitalization and digital transformation.

The concept of generations of regulation is an important framework which is helpful in analysing the maturity of modern regulatory regimes. It looks at (1) collaboration, (2) high-level principles, (3) a digital development toolbox and (4) the digital economy policy agenda. In summary:

(1) Collaboration is the dominant element of modern digital regulation, the very hallmark of G5 regulation. It measures the breadth and depth of cross-sector collaboration between the ICT regulator and domestic peers that play a role in the digital economy.

(2) High-level, principle-based regulation is important: as regulation shifts from rules to principles, the design of frameworks and what keeps them together has acquired special importance. While rules will not and should not disappear anytime soon, in some instances in the digital value chain principles are better suited for finding balanced, sound solutions, especially in areas of complexity.

(3) The digital development toolbox refers to the role that retooling the regulatory inventory and developing coherent, outcome-oriented policy instruments can play in accelerating the achievement of broader social and economic goals.

(4) The digital economy policy agenda must respond to new consumer needs, business models and market dynamics by expanding the focus of regulatory policies to new areas to reflect, induce and support the race to digital.

Figure 1: Generations of regulation: concepts and metrics
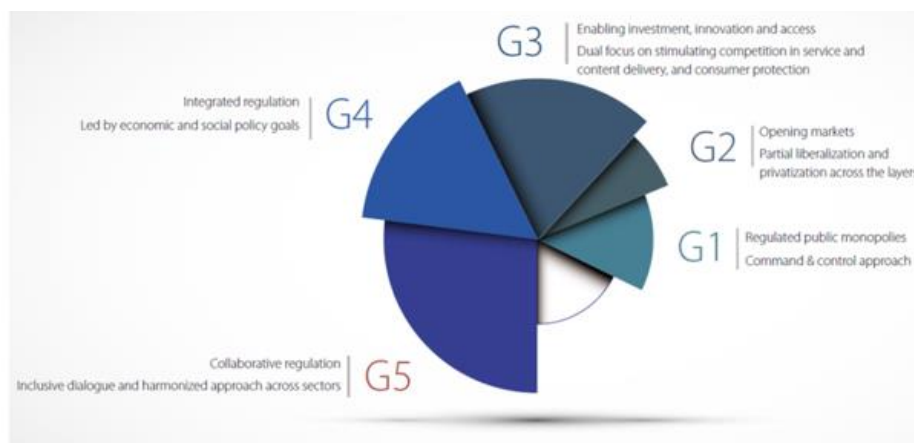
Source: ITU

Figure 2: Outlining the generations

RATIONALE FOR GENERATIONS OF REGULATION		1. Regulatory authority	2. Regulatory mandate	3. Regulatory regime	4. Competition framework
	G1	• Consolidated with policy-maker and/or industry	• Business as usual	• Doing as we have always done	• State-owned monopoly
	G2	• Separate agency	• First wave of regulatory reform	• Doing more	• Liberalization
	G3	• Separate agency, autonomous in decision-making	• Advanced liberalization of ICT sector	• Doing the right things	• Partial competition
	G4	• Separate agency with enforcement power	• Adjacent issues become core mandate	• Doing the things right	• Full competition
Source: ITU.	G5	• Separate agency as part of a network of partner regulators	• **Active collaboration across the board**	• Doing things together	• Intra-modal competition

Source: ITU

This case study shows that Rwanda's laws and its national, sector-specific and ICT sector policies, strategies and regulations are well coordinated and embrace a whole-of-government approach and the spirit of collaboration. Rwanda's regulatory and policy frameworks furthermore "tick all of the boxes" required in order to support the African Union's Agenda 2063, the East African Community's Vision 2050 and Rwanda's national Vision 2050 and to achieve the United Nations Sustainable Development Goals by 2030. Rwanda's policy framework also advances the country's commitments on climate change within the Conference of the Parties to the United Nations Framework Convention on Climate Change.

Collaborative regulation case studies: The methodology

To better understand the role and impact of collaboration and collaborative governance, ITU has launched a series of collaborative regulation case studies. They focus on regulatory and institutional frameworks and on collaborative governance in countries in different regions. The case studies detail diverse experiences and varied policy and regulatory patterns, and set out challenges, new ideas and lessons learnt by regulators as they journey towards G5 collaborative regulation. The case studies follow a similar methodology, are tailored to each region's needs and are the result of close cooperation by all parties involved.

Each case study is built on two components:

i) A 50-question survey on fifth-generation regulation that explores collaboration between government agencies and ministries, the scope and patterns for collaboration, the involvement of other stakeholders, legal tools, policy tools and processes.

ii) Interviews with key national stakeholders, including representatives of the national regulatory authority, a relevant ministry, and a private sector player or consumer association. Interviews were flexible but structured to explore practical aspects of policy implementation and regulatory reform.

The case studies set out the current policy and the regulatory and governance landscape in the country, focusing on current best practice and areas for future enhancement.

2   Rwanda's journey

2.1   Focused economic growth, interrupted by COVID-19

Despite its small population (about 12.3 million), Rwanda is a regional leader, whose economic performance is attributed to strong leadership, structural reform, significant investments in education and infrastructure and a clear focus on creating a good investment climate. The World Bank ranks Rwanda 2nd in Africa and 38th globally for ease of doing business, a position that has been earned through consistent policy and regulatory reform over the past twenty years.[1]

The unprecedented COVID-19 pandemic interrupted Rwanda's economic boom. After growing 9.4 per cent in 2019, real GDP in Rwanda was estimated to contract by 0.4 per cent in 2020 due to the COVID-19 pandemic,[2] threatening the country's ability to meet the ambitious national target of becoming a middle-income country by 2035 and a high-income country by 2050. Unemployment in May 2020 was approximately 22 per cent, compared with 15 per cent a year earlier.[3] The economic impact of COVID-19 derives mainly from the impact that the pandemic and the associated domestic and global lockdowns have had on exports, transport, hospitality and tourism in Rwanda.

In the same way as its overall approach to development, Rwanda's path to post-COVID economic recovery will have to be premised on building a knowledge economy and using ICTs to transform the country. It is likely that more private sector participation will need to be attracted to development, given that Rwanda's government-driven development approach relied on significant borrowing-financed public investment even before the pandemic (12.3 per cent of GDP in 2019).

2.2   Market developments

The Rwanda Utilities Regulatory Authority (RURA) is a stable and mature regulator. Since 2001 it has played a key role in steering the country from G1, the start of sector liberalization, to G2 and now G4 regulation with a focus on socio-economic development. RURA has laid a firm foundation for G5 regulation, notably through the licensing of the two current mobile operators (MTN and Airtel), a 4G wholesale infrastructure provider (Korea Telecom Networks Rwanda) and twenty-four Internet service providers,[4] and by way of the licensing of broadband and backhaul spectrum and the management of the universal service fund. ITU describes G5 as "complementary to the previous generations – as a different paradigm…" Interestingly, Rwanda's understanding of the importance of an integrated and collaborative approach to ICT sector growth for the benefit of the entire economy predated the conceptual framework of the generations of regulation. In many ways, Rwanda adopted the G4 and G5 paradigm while still setting up its G1-G3 foundations.

Despite the maturity of the regulatory framework and the collaborative approach to policy-making and regulation, Rwanda's active mobile broadband penetration of 42.3 per cent (see Figure 3) is significantly lower than the current global average of 71.6 per cent. Its mobile cellular

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[1]   *Doing Business*, 2020 (World Bank)

[2]   Rwanda Economic Outlook, https://www.afdb.org/en/countries/east-africa/rwanda/rwanda-economic-outlook (African Development Bank)

[3]   Ibid

[4]   Report for Licensed ICT Operators, 2020 (RURA) https://rura.rw/fileadmin/Documents/ICT/statistics/Report_for__Licensed_ICT_Operators_as_of_Septemebr_2020.pdf

penetration rate of 76 per cent matched the African regional average of 76.6 per cent in 2019 (ITU, 2019), and rose to 84 per cent in April 2021, according to RURA statistics.[5] It remains far below the current global average of 104 per cent. With mobile being the foundation for broadband and digital access in Africa, universal access to it is critical.

Figure 3: Active mobile broadband subscriptions per 100, per generation of regulation, 2007-2017
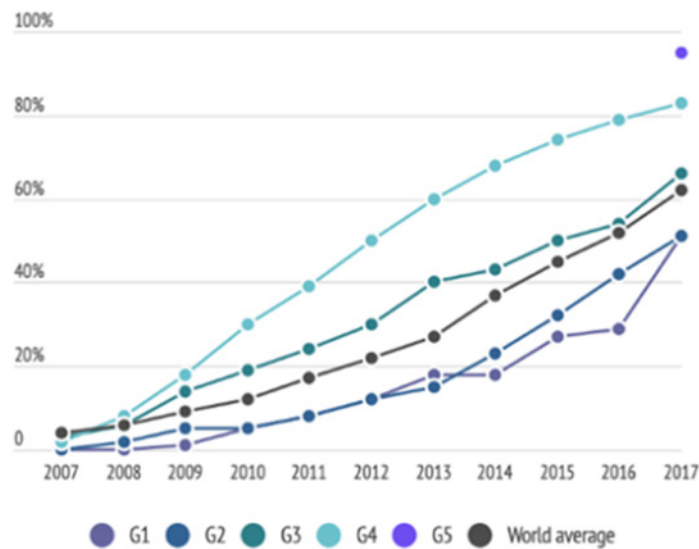
Source: ITU

Figure 4: Number of mobile cellular subscriptions per 100 inhabitants in Rwanda from 2000 to 2019
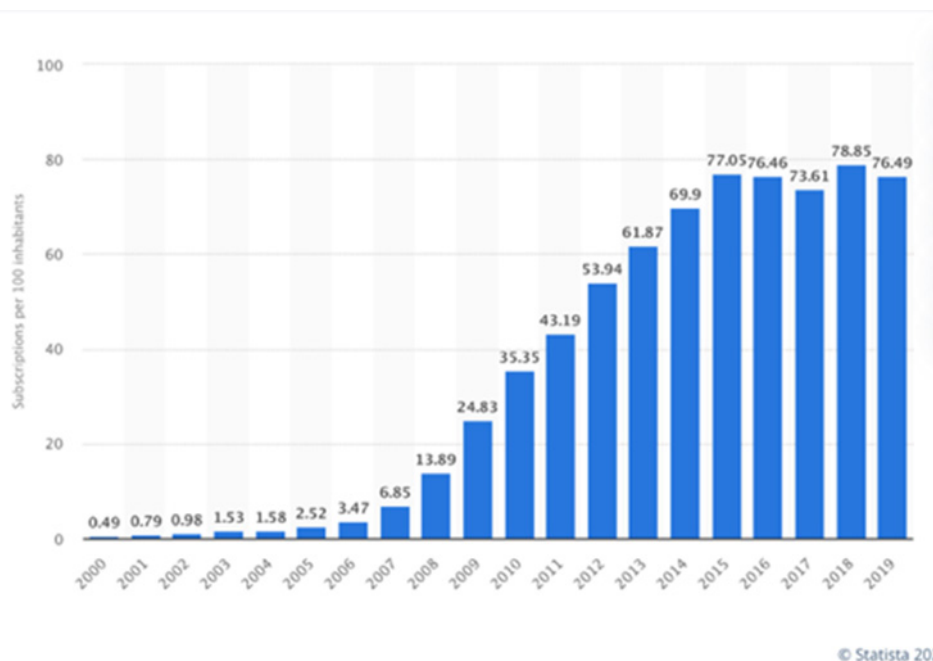
Source: Statista

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5   RURA   Statistics   (April   2021)   https://rura.rw/fileadmin/Documents/ICT/statistics/ Report_on__mobile_telephone_for_Telecom_Statistics_as_of_April_2021.pdf

The challenge for Rwanda, given that its key usage indicators continue to lag despite the G5 mindset, lies neither in a lack of world-class policies nor on supply-side difficulties, since broadband coverage far exceeds all comparators at 99.9 per cent (ITU), an impressive achievement given Rwanda's predominantly rural population (83 per cent). Rather, the challenge relates to encouraging uptake and usage of ICTs within the population. The high-level policy recommendations further below seek to address this gap with proposals to entrench collaborative regulation and broaden its scope and in so doing strengthen the policy and regulatory framework.

3   Policy context

Since the turn of the millennium, the Government of Rwanda has had a vision of a knowledge-based economy, which was initially articulated in Vision 2020 with aims including making Rwanda a middle-income country. This vision has been carried into the future-oriented Vision 2050. Vision 2050 proposes that, in the short term, macroeconomic stability and wealth creation will be promoted to reduce the dependence on foreign aid; in the medium term (2035) the priority will be to transform Rwanda from an agrarian economy to a knowledge-based economy (upper middle-income). Finally, the long-term goal (2050) is to create a productive middle class and to foster entrepreneurship, success being measured by Rwanda achieving developed-country status with a high development index.

ICT is at the core of Rwanda's development and transformation agenda. Within this context, the ICT sector is positioned as a cross-cutting enabler for the achievement of the national goals as set out initially in Vision 2020 and now in Vision 2050 and other key policies, and in particular the Smart Rwanda Master Plan 2020 (Smart Rwanda).

Figure 5: Approach to meeting policy goals, Rwanda NST
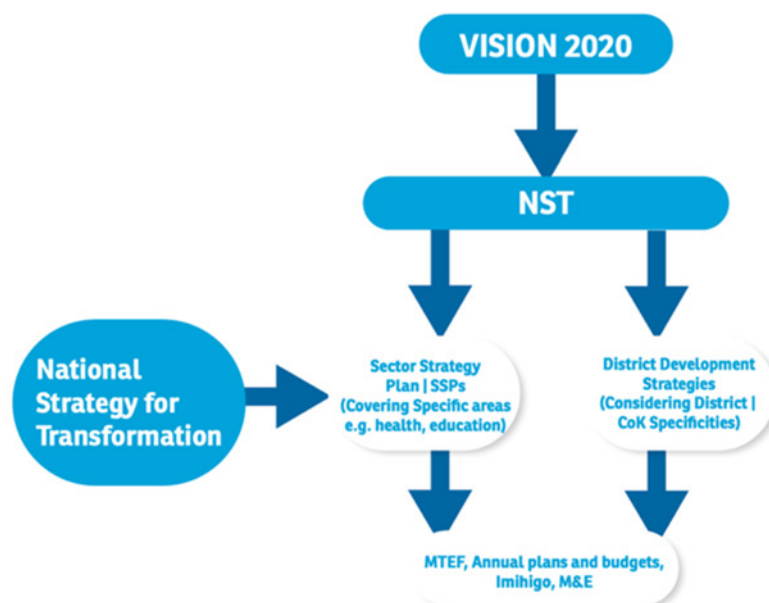
Source: ITU research

Rwanda's policy aspirations are pursued through a series of seven-year National Strategies for Transformation (NST1) underpinned by detailed sectoral strategies that aim at achievement of the Sustainable Development Goals (SDGs). Importantly, it also has an institutional framework, across the economy, that is premised on cooperation, collaboration, accountability and transparency enshrined in the notion of *Imihigo*, which can be translated as a vow to deliver. *Imihigo* is embedded in Rwandan culture and its institutional framework and ultimately underpins the performance management approach which governs the activities of each ministry, department and agency and every civil servant. Through *Imihigo* every stakeholder is held responsible for delivering a part of a national target or objective – collectively they thus commit to achieving the SDGs, for example. Accordingly each player takes ownership of a part target.

From an implementation perspective, government budgets are linked to the annual performance management programme and directly linked to the goals and objectives set out in the policy instruments making them tangible. This approach is only possible due to a broadly evidence-based, centralized and coordinated approach to policy-making at a national level. Although a regulatory impact analysis (RIA) is not a prerequisite for all policies and decisions, most national policies have a baseline. Thus, the 21.77 per cent of the population using the Internet in 2018 is the baseline for the target of 60 per cent by 2035 and 88 per cent by 2050, and the 40 per cent of public services that were fully online in 2018 is the baseline for the target of 100 per cent by 2035, to ensure an accountable and capable state.[6]

Figure 6: Smart Rwanda Master Plan Framework
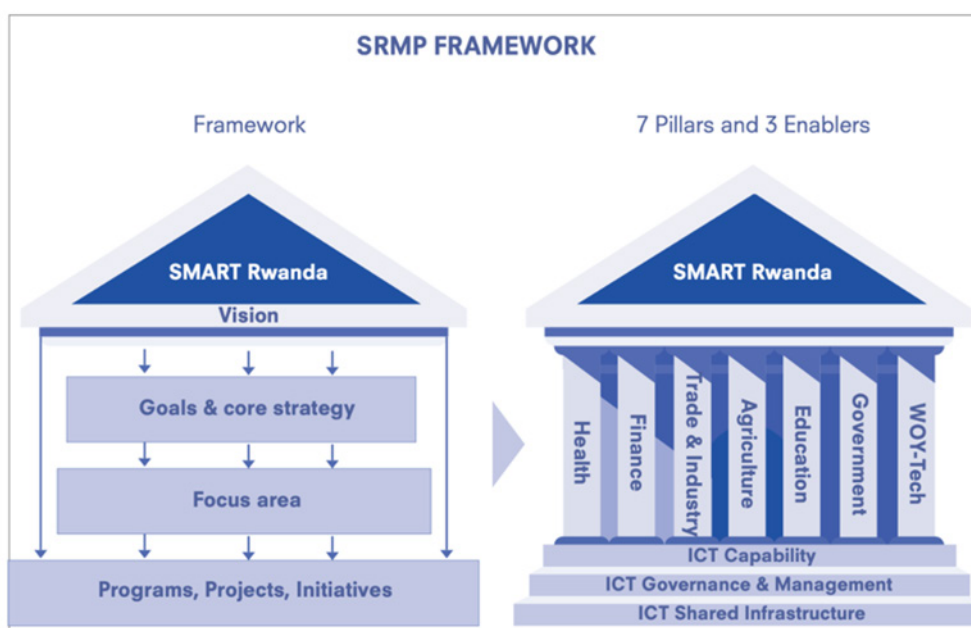
Source: ITU

Rwanda's policies and strategies across the economy are directly linked to the national vision and the Smart Rwanda Master Plan. Smart Rwanda is inherently SDG-oriented and seeks to improve Rwanda's economic competitiveness using modern technology, innovation, research, quality infrastructure, a favourable cost of doing business and micro factors such as increased firm and labour productivity.[7] The policy makes plain the inter-relationship between the ICT

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[6]   Vision 2050 Indicators Matrix
[7]   Vision 2050, page 5

sector and other sectors, in particular the seven priority sectors of health, finance, trade and industry, agriculture, education, government, and the empowerment of women and youth in technology (WOY-Tech). To that end, the role of ICT institutions is to make sure that:

- ICT capabilities;
- ICT governance and management;
- ICT shared infrastructure.

are in place to facilitate the implementation of ICT strategies in each of these sectors.

Alone, the ICT sector regulator and agencies cannot deliver on these objectives; each of the seven priority sectors has agencies and regulators responsible for implementation of their broader sector policies and the areas in which they interface with the Ministry of Information, Communication, Technology and Innovation (MINICT), RURA, the Rwanda Information Society Agency (RISA) and other sector-specific institutions.

3.1   Main ICT sector policies

Figure 7: Main ICT sector policies

Source: Author, based on Smart Rwanda Master Plan
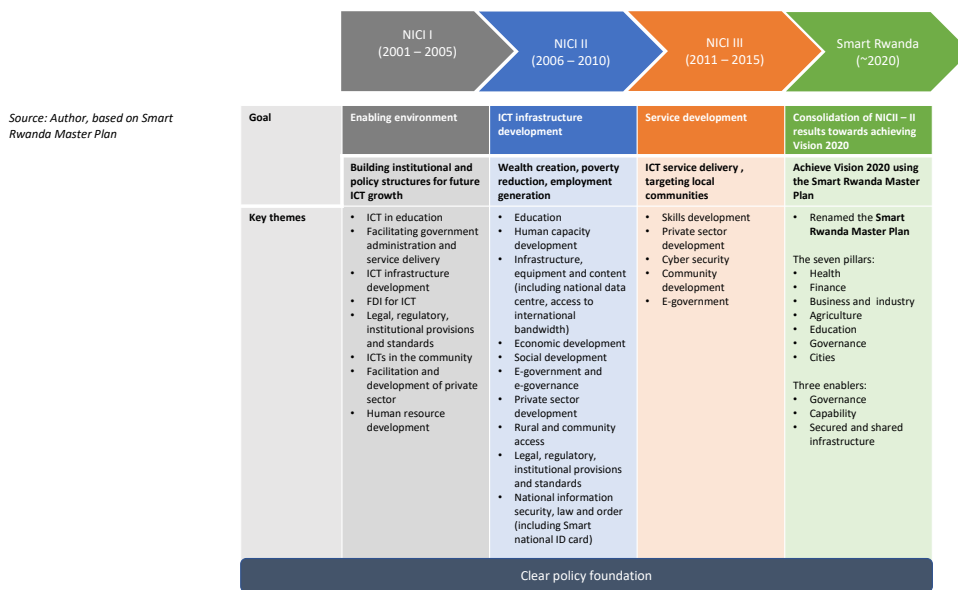
Source: ITU

Consistency has been a key theme underpinning Rwanda's ICT policy framework for two decades since the development of the first National Information Communication Infrastructure (NICI) Policy. From the beginning, ICT was identified as cross-cutting and underpinning economic development. In the fourth 5-year ICT or NICI policy (renamed the Smart Rwanda Master Plan) digitalization and transformation have taken centre stage and are part of the government's ethos which is driven from the top – by the President himself.

Many countries have developed sector-specific policy frameworks that are complementary to their national ICT policies and strengthen the digital economy. These policies tend to play a role in creating a stable environment, building user trust and stimulating demand. They include:

- broadband or digital transformation policy and strategy;

- e-government framework;
- electronic transactions framework;
- e-commerce policy and strategy;
- data protection policy, legislation and regulations; and
- cybersecurity policy, legislation and regulations.

In Rwanda, ICT policies and strategies that cut across the economy and support the national objective of putting ICTs at the centre of development include the ICT Sector Strategic Plan (2018-2024), which is complemented by ICT sector-specific instruments such as the following:

- **The Broadband Policy (2013)** has the goal of ensuring universal access to affordable, reliable and secure broadband infrastructure and services by 2020.
- **The Cyber Security Framework** consists of the Cyber Security Policy, the Prevention and Punishment of Cyber Crimes Law, and the Cyber Security Strategic Plan (2015). These key instruments are overseen by the National Cyber Security Agency (NCSA), which hosts RW-CSIRT, while RURA hosts the Root-CA.
- **The National Digital Talent Policy (2016)** was published by the Ministry of Youth and ICT to address the mismatch between the supply and demand of ICT skills, increase the number of ICT professionals with market-oriented, specialized ICT skills and increase digital literacy. Ultimately this policy aims to increase the usage of ICTs in Rwanda.
- **The National Data Revolution Policy (2017**) is overseen by the National Institute of Statistics. It recognizes the fourth industrial revolution and focuses on building big data and analytics capabilities to derive insights that contribute to achieving major social-economic benefits, including informed policy decision-making, enhancing transparency and promoting citizen participation, increasing GDP, monitoring national development progress and progress on SDGs, and supporting research and development, business intelligence, innovation for data-enabled applications and so on.

A National Science and Innovation Policy was adopted in 2020 and it is anticipated that in 2021 the Emerging Technology Strategy and Artificial Intelligence Strategy will be tabled for approval by Government.

These sector-specific and cross-sectoral policy frameworks support and reinforce the Smart Rwanda Master Plan, the common vision for ICT sector policy which seeks to sustain Rwanda's transformation from an agrarian economy (agriculture currently accounts for about 29 per cent of GDP and employs 72 per cent of the workforce) to a competitive, knowledge-based, innovation-driven economy with a service-oriented, modern, accountable, real-time, smart government. While core and innovative policies are in place, some of the typical polices that support the digital economy, and in particular those that encourage consumers to utilize digital platforms, appear to be absent from the Rwandan framework. The country does not have a comprehensive regulatory framework for data protection, intellectual property and competition law and policy, which are key instruments for building the consumer trust that is a prerequisite for the broad adoption of digital solutions and growth of the Rwandan e-commerce sector.

3.2 Cross-sectoral policies

Rwanda's integrated approach to policy development and implementation ensures that the use of ICTs and digitalization is built into sector-specific and cross-sectoral policies. The priority sectors set out in Smart Rwanda each have an ICT or digital strategy and implementation plan.

Financial inclusion is high on the Government's agenda. Rwanda's has a dual focus on "building a digital and cashless society and transforming the country into a digital society"; as a result,

fintech policies and strategies are particularly important and well developed. Smart Rwanda highlights the desire to expand Rwanda's financial infrastructure to increase access to financial services and support innovation in ICT. The financial services sector therefore has several ICT-related policies addressing the various economic activities that are involved and the platforms, applications and other innovations that can facilitate their contribution to economic growth, including:

- **The National Strategy for Transformation (2017-2024)**, which includes goals and priorities related to the acceleration of innovation and the growth of digital solutions;
- **The Payment System Strategy (2018-2024)**, which contains a number of strategic objectives, including fostering an enabling environment for innovation in the payment system through collaboration between the public and private sectors; and
- **The National Financial Inclusion Strategy (2019-2024)**, which seeks to take advantage of the potential of the fintech sector to expand digital financial services and achieve 100 per cent financial inclusion by 2024. Financial inclusion in Rwanda refers to useful and affordable financial products and services that meet consumer needs including transactions, payments, savings, credit and insurance.

These policy and strategy documents are supported by the Payment Services Providers Regulations (2018), expanding the central bank's oversight of the activities of providers of payment initiation services and aggregators. This in turn expands the range of market participants able to access the national payment system.

According to Finscope, in 2020 (pre-COVID) about 60 per cent of adults in Rwanda used mobile money. COVID-19 played a significant role in increasing Rwandans' use of digital financial solutions and moving the country closer to its goal of being a cashless society. The number of unique subscribers sending money nearly doubled, from 600 000 in the week before lockdown in March 2020 to 1.2 million in the week after. In the final week of April, 1.8 million unique subscribers made mobile money payments. This increase is due to the lack of mobility of Rwandans during that period, as well as incentives put into place by the Bank of Rwanda (see Box 1).

Box 1: Digitalization and mobile money framework enable speedy COVID-19 response

The early experiences of Rwanda showed the kind of impact these digitalization efforts can have. On 19 March 2020 the Central Bank instituted a set of rapid economic policy changes to support both businesses and individuals during the lockdown, and to further the national digitalization agenda. These decisive measures were in place for three months, and they included:

- zero charges on all transfers between bank accounts and mobile wallets
- zero charges on all mobile money transfers
- no merchant fees on payments for all contactless point-of-sale (via mobile) transactions
- an increase in the limit for individual transfers using mobile money wallets, from RWF 500 000 to RWF 1 500 000.

Source: https://nextbillion.net/covid-rwanda-mobile-money

Other Smart Rwanda priority sectors include education and health, on which guidance is provided by the ICT in Education Policy (2016) and the Health Sector ICT Security Policy (2016), respectively. The primary goals of the Education Sector Strategy (2018-2024) include

developing digital content aligned to the curriculum; increased ICT penetration and usage in education through smart classrooms; and the development of ICT for education leadership and teacher training to improve teacher digital literacy.[8] The smart classroom programme further aims to provide ICT devices, digital content and Internet connectivity to primary and secondary schools, with school electrification as a baseline.

The ICT4RAg Strategy (2016-2020) sets out the vision for the use of ICTs in the agriculture sector, which is a significant contributor to the Rwandan economy. The ICT for Governance Cluster Strategy 2020-2024 is cross-cutting and highlights the goal of attaining 100 per cent government digital transformation, with big data and analytics among the special focus areas for the five years that it covers.

Noting that the various cross-sectoral strategies tend to be based on a five-year planning period, complete with budgets to facilitate implementation, recently the ICT Hub Strategy (2020-2024) was put into place to consolidate many of the existing strategies and to assist the country in moving from policy to implementation. The ICT Hub Strategy acknowledges the Government's successes in increasing the supply of infrastructure and bandwidth, but highlights that, if Rwanda is to become an ICT hub and the centre for e-commerce in the region, the country will have to devise mechanisms to:

- increase awareness of the benefits of ICT within the population;
- increase digital literacy and develop a labour force highly skilled in ICT; and
- secure funding for the various programmes and strategies.

The Strategy further notes that Rwanda's fledgling private sector is not yet big enough for the ICT sector to be broadly independent of government and donor funding. Thus, two key features of the policy framework, its centralization and the strength of vision of government, need to be balanced with private sector and people participation. The consequences of these challenges are seen in the relatively low mobile penetration rate of 76 per cent (ITU) and Internet usage rate of 22 per cent (Government of Rwanda).

4   Institutional framework

4.1   Collaboration amongst ICT institutions

The Ministry of Information, Communication, Technology and Innovation has as its mission to address national priorities for economic growth and poverty reduction through the development and coordination of national information technology, communication and innovation policies and programmes as well as the empowerment of its citizens. It is the key ministry responsible for oversight of the ICT sector and development and monitoring of the key ICT-related policies promoted by other sectors such as education, health and agriculture, which are set out in this case study.

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[8]   Rwanda Education Sector Strategy (2018-2024), http://www.minecofin.gov.rw/fileadmin/templates/documents/NDPR/Sector_Strategic_Plans/Education.pdf

Figure 8: ICT institutional framework, adapted from ICT Hub Strategy 2018
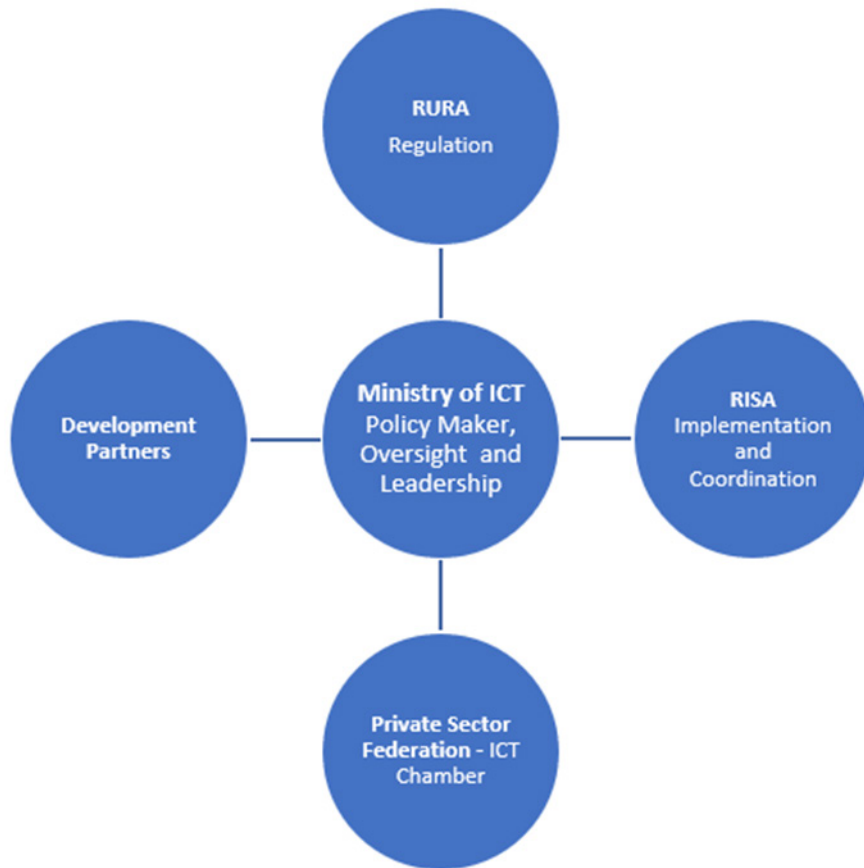
Source: RURA, Rwanda

The Ministry has ICT policy oversight over RURA, a multi-sector regulator set up under the 2013 law that determines its institutional framework. The mandate of RURA covers the utility sectors of energy, water and sanitation, transport and ICT. Within ICT its scope covers the telecommunications, media, postal and e-commerce subsectors. It is responsible for consumer protection and competition regulation across each of the sectors it regulates. RURA's mandate within the ICT sector is to license, monitor and enforce licence obligations, manage and monitor scarce resources, and regulate standards and quality of service. Its role covers innovation and cybersecurity.[9] RURA advises policy-makers, including MINICT, on ICT-related issues and represents Rwanda in international organizations on issues pertaining to ICT.[10]

For all intents and purposes, RURA performs many of the functions of a best-practice-converged ICT sector regulator (albeit for multiple sectors). Its ICT mandate notably includes media and digital technology to the extent that it utilizes spectrum resources or requires licensing. RURA is responsible for laying the foundations for effective and efficient digital government architecture, making sure the licences, infrastructure and services are in place to enable digitalization. It concerns itself with the key aspects of G1 to G3 regulation including sector-specific regulation and facilitation of competition, and is responsible for most aspects of Track 3 of the G5 Benchmark, namely cybersecurity, taxation and pricing, accessibility and digital financial services, amongst others. Where necessary, RURA performs its regulatory functions

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[9]   https://rura.rw/index.php?id=49
[10]   Official_Gazette_no_14bis_of_08_04_2013.pdf

in collaboration with other regulators, as it has from the outset. The motivation for this is both a clear understanding of its cross-cutting role and also the influence of *Imihigo* and a robust annual performance management framework.[11]

While RURA regulates the sector and facilitates the implementation of policy by private sector players, RISA, established in 2017, is responsible mainly for coordinating the implementation of ICT strategies and projects that involve the public sector. Inherent in its mission is a focus on digital transformation, the implementation of the Smart Rwanda Master Plan, and collaboration. RISA's mandate includes planning and coordinating the implementation of a national ICT-for-development agenda. To this end, the Agency works with private and public-sector stakeholders to digitalize government services and ensure easy access to ICTs by citizens. RISA also liaises with key stakeholders in the areas of health, finance, trade and industry, agriculture, government, and gender and youth promotion. With an implementation focus, RISA has collaboration and partnership built into its institutional DNA, including collaboration with RURA. It is a coordinator of and champion for Rwanda's Digital Transformation, with Irembo, the e-government portal, being one of its flagship projects.[12] In Kinyarwanda, Irembo means access, service and openness.

Irembo is an exemplary case study for government collaboration based on the availability of high-quality ICT services (see Box 2). The regulatory groundwork done by RURA is aimed at ensuring that the private sector delivers connectivity nationally and at an affordable rate in order to give life to the cross-sectoral policies and the various projects carried out across the economy, including initiatives such as Irembo.

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[11]   RURA Interview March 2021
[12]   Law N° 02/2017 of 18/02/2017

Box 2: Irembo: the one-stop e-government portal
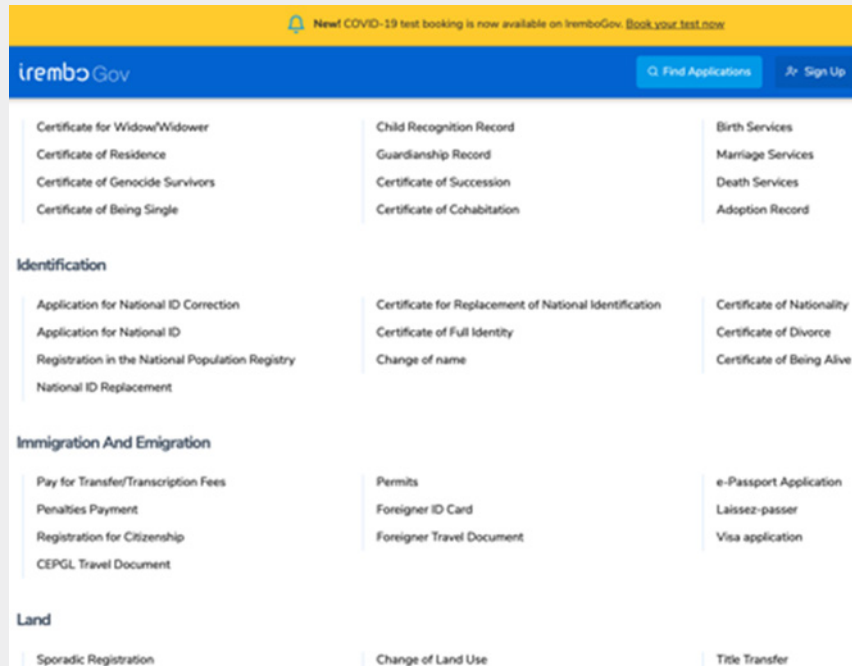
Irembo is a government-to-citizen e-service portal which enables citizens to submit applications and make payments in partnership with mobile and banking platforms. Services are available both via the web and using the USSD protocol, thereby reaching any user having access to a feature phone. Currently, 88 paid e-services are offered in domains ranging from tax, health and education to tourism.

As regards its ownership structure, Irembo is a private company, with the government as the majority shareholder. It is a joint project by the Government of Rwanda and the Rwanda Development Board, and includes input from all six participating government departments, including RISA, which is represented on the Board.

4.2   Collaboration across sectors and between regulators

Rwanda, like many other countries, has a significant number of laws, regulations and policies that overlap and which are overseen by a multitude of regulators. What differentiates the Rwandan approach is the high level of coordination intrinsic in its approach. Thus, rather than duplication, there is a high degree of synergy and complementarity between the various policies and strategies. This is important for creating an environment of certainty and predictability. It also lays the groundwork for effective collaboration between institutions where:

- there are overlapping rights and responsibilities across sectors and borders;
- different forms of expertise are needed, such as technical expertise; and
- legitimacy and acceptance of decisions directly impact implementation.

Legitimacy and consensus are key elements of Rwanda's success. Noting the importance of consensus in Rwanda given its history, every decision is a consultative process as a matter of culture. There is an understanding that "no entity is an island". Accordingly, in line with its G4 positioning, RURA has a good working relationship with a number of institutions that are key to delivering Smart Rwanda. The cooperative arrangements between RURA and its counterparts

are formalized via legislation, regulations or memoranda of understanding (MoUs). Importantly, the relationships are of high quality and reflect the breadth and depth of engagement on cross-cutting issues. RURA collaborates with:

- **The Bank of Rwanda (BNR or Central Bank)**, for the facilitation of financial inclusion strategies and fintech applications and platforms. This has been achieved through a number of instruments including a formal MoU between the two regulators for oversight of financial market infrastructure and payment services. BNR and RURA also share responsibilities for cybersecurity to the extent that it affects payment systems, monitoring of digital finance transaction data for anti-money-laundering efforts, and data protection with regard to the extraction and use of customer financial data. The relationship forms the basis for the response to nation-wide disasters (see Box 1) and for the implementation of strategies in other sectors, such as the e-Agri wallet cashless payment and loan system envisaged in the ICT4Agri Strategy.

- **The Rwanda Environment Management Authority (REMA)**, which is charged with the enforcement of environmental laws and regulations.[13] The authority in charge of standards (RSB) has developed e-waste management standards that govern handling, collection, transportation and storage of various categories of e-waste to ensure the environment and human health are protected against the potential adverse impacts of e-waste. In 2018 RURA also promulgated e-waste regulations that apply to every "producer, retailer, importer, collector, transporter… consumer assembly, sale, purchase and processing of e-waste in Rwanda." This three-way collaboration demonstrates how, at a regulatory level, the authorities responsible for ICT, infrastructure and environment have played key roles in developing Rwanda's e-waste management framework.

- **The Rwanda Inspectorate and Consumer and Competition Authority,** an agency of the Ministry of Trade established in 2020**,** which has an MoU with RURA, the competition authority for the utilities sector. In its competition regulations, RURA allows for its licensees to appeal any of its decisions to the *Cour d'Arbitrage* (arbitration court) or commercial court.

- **The Rwanda Revenue Authority**, which collaborates with RURA to facilitate the exchange of information, enable systems integration and support the oversight of taxes related to mobile money. In addition, the players in the sectors regulated by RURA need to pay taxes and licence fees. The MoU allows RURA and the Rwanda Revenue Authority to share and verify information in order to monitor compliance with requirements to submit financial information such as audited financial statement.

- **The Food and Drug Administration (FDA)**. FDA recently signed an MoU with RURA after the COVID-19 pandemic led to an increase in the use of food delivery services and apps as an alternative to people going out during the lockdown. The initiation of the agreement by RURA and the speed with which the MoU was concluded demonstrate the authority's responsiveness. Under the terms of the MoU, FDA and RURA collaborate to ensure the safe delivery of food, including the safety of food transportation, the ability for regulators to perform random sanitary checks on kitchens, food delivery vehicles and containers, by taking swabs and samples and by other means. FDA has jurisdiction over laboratory tests and sets the rules with which food service providers must comply; however, in the age of new technology these are difficult to enforce without RURA support. FDA sets the rules but cannot enforce them, so RURA plays the enforcement and consumer protection role in the event that, for example, a container is contaminated, a customer gets food poisoning or other complaints are raised.

In addition to the above, RURA has MoUs with organizations such as the Rwanda Development Board (RDB, www.rdb.rw); the Rwanda Biomedical Centre (www.rbc.gov.rw); the Ministry of Infrastructure (MININFRA, www.mininfra.gov.rw) on infrastructure issues such as fibre regulation; the newly formed Rwanda Space Agency for issues relating to satellite regulation;

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[13]   National E-Waste Policy

and educational institutions locally and internationally, in particular Carnegie Mellon University, the University of Rwanda and the National Science and Technology Commission.

One of the reasons why RURA is able to facilitate collaboration with other regulators is that, at the regulatory level, RURA firmly adheres to its traditional role as an ICT sector regulator – licensing, setting standards, protecting consumers – and leaves innovation, digitalization and the leadership role that characterizes the future of ICTs in the hands of the various institutions established to focus on these aspects and the sector-specific regulators, with which it collaborates on technical and administrative matters. It does, however, monitor the intersection of its role with other institutions and sectors and is proactive in identifying areas of overlap and collaboration.

5 Regulatory maturity and tools

5.1 From ICT to digital regulation

Given the clearly identified and central role of ICTs and digital services in delivering the Rwandan vision, the stakes for MINICT, RURA and RISA are high. It is imperative that these sector-specific entities translate the significant impacts of regulatory and policy actions taken in the ICT sector into benefits for citizens and for businesses in all sectors of the economy, in terms of productivity, employment, skills, income distribution, trade and the environment.[14]

Rwanda's strong policy and regulatory foundation consists of the core rules and regulations such as those on facility sharing, spectrum management and competition that govern a growing ICT market – perfect for G3 and G4 regulation. Furthermore, the consideration and consultation that inform the regulatory environment affect the quality of the regulatory instruments. Regulatory impact analyses (RIAs) ensure the appropriateness of regulatory interventions. Regulatory tools that are considered good practice in other markets, such as regulations on number portability and local loop unbundling, are not in place, but are arguably less relevant under Rwanda's conditions: a duopoly and a predominantly mobile market.

What cuts across the regulatory environment is that RURA does not limit its role to ICT sector regulation but embraces digitalization. It uses this to improve its regulation of other utility sectors, as well as to collaborate with other regulators. It is able to do this due to its focus on innovation and its forward-looking and proactive approach. RURA is acutely aware of ICT-related developments across the economy and seeks to facilitate them while safeguarding consumer protection. It does so by using innovative and incentive-based regulatory tools to complement the traditional rules and regulations in the ICT domain. Rwanda's ICT-centric innovation ecosystem is currently at an early stage of development, but rapid progress is happening with the key pillars of support networks, capital and talent.[15]

The best example of Rwanda's high level of policy and regulatory agility is its progressive "test and learn" environment, where new ideas, innovation and entrepreneurship are welcomed and nurtured. In Rwanda, companies can apply for and obtain a one-year permission, renewable once, which allows them to trial new ideas, concepts and services with the public without having

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[14]   Regulatory Effectiveness in the Era of Digitalisation, OECD (2019). See http://www.oecd.org/gov/regulatory -policy/Regulatory-effectiveness-in-the-era-of-digitalisation.pdf
[15]   ITU, ICT Innovation Profile – Rwanda, 2017

to be concerned about licensing. The proof-of-concept hub or sandbox provides a light-touch regulatory framework for projects, including limits in terms of geographical coverage (no nationwide trials) and the number of consumers targeted for the period of the licence.

Rwanda's proof-of-concept hubs have enabled the development of transformative services and applications such as drone-based and AI-driven health services and e-hailing applications. They are an ideal place to test new technology and for the policy and regulatory environment to identify gaps in the regulatory framework that need to be closed to facilitate innovation. For example, to trial the use of drones for development by Zipline, a sandbox project that was granted a proof-of-concept permission, the Government took measures to open the airspace to more operators and applications. Under the performance-based regulations, if the drones meet safety requirements then they can operate. A performance-based approach allows both regulators and operators to respond dynamically to technical challenges, including ensuring public safety, according to the Government of Rwanda.[16]

The first applicants for proof-of-concept permissions in 2018 were Riha, a mobile wallet payment platform which uses AI and machine learning to understand people's behaviours and their spending patterns so that they can better manage their spending,[17] and Volkswagen, which trialled electric vehicles for ride hailing. These have been followed by many others, including Yego, which has developed ride hailing for motorcycles.[18] Another innovator, Vanu, essentially provides last-mile services to mobile-network operators (MNOs) on a revenue-sharing model. It is a turnkey mobile communication solutions company that has been granted permission to test a concept under which MNOs serve off-grid markets by providing solar-powered microcells for underserved areas.[19]

Of concern is the fact that the companies that seem to be harnessing most of the opportunities presented by Rwanda's test-and-learn regime tend to be international firms from Europe and the United States that are capable of raising funding for their Rwanda-based trials. This highlights a potential weakness in the proof-of-concept regime, which focuses on providing the space for innovators to test their ideas but does not consider the complete needs of entrepreneurs. It assumes that the innovator already has the funding and business skills to invest in the trial and ultimately to take the concept to market, if the trial is successful. It also does not take into account the total cost of innovation and the impact of existing regulation on local entrepreneurship, including:

- operational costs associated with complying with localization requirements versus their impact on protection of information, which is the reason for their existence, and
- the impact of local fees and tax on the participants; while Rwanda has succeeded in putting into place incentives for start-ups in order to reduce barriers to entry, these are generic and not specifically intended to facilitate tech businesses.

It will be interesting to see the long-term impact of the various sandbox projects on the Rwandan economy, local entrepreneurs, job creation and development. A risk is that Rwanda may prove to be an ideal market for incubating and testing ideas, but not for launching them. The market's capacity to absorb ICT products remains limited by income levels and the low penetration of

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[16] World Economic Forum Advanced Drone Operations Toolkit, http://www3.weforum.org/docs/WEF_Advanced_Drone_Operations_Toolkit.pdf
[17] https://www.newtimes.co.rw/business/central-bank-grants-testing-approval-emerging-fintech-firm
[18] https://www.yegomoto.com
[19] https://www.vanurwanda.com

smart devices and digital literacy.[20] The risk is that, given the relatively small domestic market, sandboxes prove ineffective at helping Rwanda achieve its broader policy goals of spurring local innovation, creating jobs, and facilitating socio-economic development.

Box 3: Digital health transformation

1   Proof of concept/sandboxes

Rwanda's policy of being a *"proof-of-concept destination and living laboratory"* as set out in Vision 2050 facilitates innovation and incentivizes start-ups in the technology space. A number of digital health projects have been incubated:

- Zipline is an American e-health start-up that set up a delivery company which uses drones to bring vital medical supplies and blood to those that need them most (https://flyzipline.com). In 2016, the Government of Rwanda brought in Zipline to improve blood delivery. This evolved into a drone delivery programme on a national scale, a world leader in its impact and scope. Lives were saved and blood wastage largely eliminated, demonstrating the vital role that drones could play.
- Babyl is a digital health care provider whose services include providing access to medical professionals and laboratory services, as well as AI-powered triage services for a call centre. Babyl asserts that the "AI medical agent can process hundreds of millions of symptoms combinations and infer diagnoses mimicking the way doctors think." (http://www.babyl.rw)

Beyond digital health, the Rwandan policy framework has enabled the launch of Charis Unmanned Aerial Solutions (UAS), the first licensed drone company in Rwanda which provides services including data collection, mapping and spraying for industry, including mining and agriculture (https://charisuas.com/about-charis-uas/).

2   Innovation, collaboration and COVID-19 responses

In response to COVID-19, Rwanda introduced robots which performed a range of services including:

- Cleaning and disinfecting with ultraviolet lights that can kill deadly micro-organisms, with the capacity to speedily clean and disinfect operating, labour and delivery facilities faster, more effectively and in a less labour-intensive manner than manual cleaning.
- Case management, which contributed to limiting human interaction between health care providers and patients (MINICT and Rwanda Biomedical Centre).
- Medical support to administer temperature checks, monitor patient status, and keep medical records of COVID-19 patients. "These high-tech robots have the capacity to screen 50 to 150 people per minute, deliver food and medication to patient rooms, capture data and notify officers on duty about detected abnormalities," according to MINICT.

Sources: Babyl, Zipline, MINICT

While there is evidence of collaboration across sectors and with agencies and ministries (horizontal collaboration), there is less evidence in Rwanda of vertical collaboration. What is absent from the research is evidence of collaboration by RURA with the private sector or of the use of self-regulatory or co-regulatory tools such as codes of conduct.

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[20]   ITU, ICT Innovation Profile – Rwanda, 2017

5.2   Incentives and obligations: responsiveness and goal orientation

Rwanda's development has been strongly driven by the Government. Nonetheless, the regulatory environment includes incentives for private sector investment, which were augmented in response to COVID-19:[21]

- the Central Bank suspended mobile money fees for three months and waived charges on push and pull services between bank accounts and mobile wallets (see Box 1);
- the Government launched a two-year RWF 100 billion Economic Recovery Fund to, in part, support businesses in the sectors most impacted by COVID-19;
- the Ministry of Information, Communication, Technology and Innovation launched Corona Action Rwanda, a grant competition for innovative solutions, to encourage young entrepreneurs to develop scalable and sustainable solutions to mitigate the socio-economic impact of the pandemic. Four projects have won grants, while thirteen other Rwandan organizations have offered to support 30 projects that did not win grants but proved their potential to weather the unprecedented disruptions caused by COVID-19.[22]

In addition, the existing obligations contained in individual and general licensees, such as those relating to infrastructure sharing and universal service obligations for network rollout and the provision of public and emergency services, remained in place.

6   Conclusion

Rwanda's policy framework "ticks all of the boxes" required in order to support a strong digital future. Rwanda institutionally is well positioned to fit into the paradigm of G5 collaborative regulation. It is set to meet the G5 criteria in terms of mindset and action alike. The legal mandate of RURA and RISA and the supporting mandates of peer regulators are sufficiently well articulated to promote collaborative regulation. In addition, policy-making and regulation making are comprehensive, with consultative processes and collaborative tools in place to facilitate them.

Nonetheless, despite a strong policy and regulatory foundation and a G5 mindset, market outcomes in Rwanda fall short of the expected outcomes of such a digitally focused policy context. The ICT Hub Strategy is a key strategy which recognizes this. The disjuncture is reflected in key indicators such as mobile broadband penetration as well as in the dearth of smaller local start-ups supported by the proof-of-concept hubs and the regulatory sandbox regime. Uptake and usage of ICTs and of the incentives that have been put into place to facilitate innovation are lower than one would expect in such an explicitly and deliberately ICT-centred economy.

The situation in Rwanda shows that while policies, laws and regulations are central to good governance, on their own they are not sufficient to deliver digital transformation. A digital economy ecosystem approach is indispensable: supply-side interventions driven by government have had a positive economic impact, but demand-side measures are also needed, focusing on increasing digital literacy, building capacities in the workforce and fostering consumer confidence and trust. These demand-side interventions will facilitate digital inclusion and play

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[21]   UNCTAD, COVID-19 and E-Commerce: Impact on Business and Policy Responses https://unctad.org/system/files/official-document/dtlstictinf2020d2_en.pdf

[22]   https://www.minict.gov.rw/news-detail/corona-action-rwanda-an-initiative-to-support-solutions-to-problems-caused-by-covid19; and 5 June 2020 Press Release at https://coronaactionrwanda.rw

a key role in "switching on" Smart Rwanda. This in turn will ensure that attainment of the country's digital economy and ICT hub visions lead to the elimination of poverty and the attainment of the Sustainable Development Goals in 2030 and ultimately Vision 2050.

7   High-level policy brief – Rwanda

7.1   Context

Collaboration, a hallmark of fifth-generation collaborative regulation (G5), is a pervasive feature of the Rwandan national policy framework and its ICT policy framework, both of which support the country's digital future. Rwanda's regulatory and policy frameworks "tick all of the boxes" required in order to support Vision 2050 and achieve the United Nations Sustainable Development Goals (SDGs) by 2030, as well as the African Union's Agenda 2063, the East African Community (EAC) Vision 2050, and Rwanda's Intended National Determined Contributions (INDCs) as announced to the Conference of the Parties to the United Nations Framework Convention on Climate Change.

The Government of Rwanda has a broad vision of sustaining Rwanda's transformation from an agrarian economy (agriculture currently employs 70 per cent of the workforce), to a competitive, knowledge-based, innovation-driven economy with a service-oriented, modern, accountable and real-time (SMART) government. It envisages doing this by ensuring that the priority sectors of health, finance, trade and industry, agriculture, education, government and the empowerment of women and youth in technology (WOY-Tech) are supported by:

- ICT capabilities;
- ICT governance and management; and
- ICT shared infrastructure.

ICT/Digital is at the centre of Rwanda's development approach and collaboration is the key means of achieving them. This is bolstered by Imihigo performance contracts. *Imihigo*, loosely translated as "vow to deliver", is a traditional Rwandan practice of setting and achieving goals. Imihigo coupled with the concept of performance contracts has been one of the ways in which Rwanda has put into place monitoring and evaluation mechanisms to enable the Government to meet its policy and development goals in the ICT sector and across the economy.

7.2   Rwanda already has a G5 mindset

Before putting into place structural or formal measures to facilitate collaborative regulation, it is important that G5 policy-makers and regulators adopt a G5 or ecosystem mindset. The new ecosystem may not be intuitive, given the siloed approaches historically taken to the telecommunication sector and to governance in general in many countries around the world. The initial change that is required to implement collaborative regulation is behavioural.

Rwanda has overcome this hurdle. The vision of building a digital society and knowledge economy has been driven from the highest levels over the past two decades – the political will to make Rwanda the ICT hub of the region is unquestionable. There is a clear understanding of the fundamentals of broadband and its impact on socio-economic development. Furthermore,

Rwanda's institutional framework is clear. The ICT sector policies and the sector-specific ICT policies are aligned with the broader national vision and are also examples of good practice in that they are:

- **Based on a strong ICT policy and regulatory foundation** – RURA has a clear understanding of its seemingly discrete expert role (i.e. spectrum management, type approval, licensing), but at the same time is able to see the connection between its role and the entire ecosystem. The same holds true for MINICT. Both see themselves as facilitators of the delivery of the infrastructure and services that underpin the digital economy.

- **Holistic –** The policy and regulatory framework includes clear role definition coupled with identification of areas where cross-sectoral collaboration is necessary in order to achieve the common national and sectoral visions set out in Vision 2050 and the Smart Rwanda Roadmap, amongst others. Areas of collaboration are addressed through memoranda of understanding between RURA and a range of other regulators and agencies. including the Bank of Rwanda, the National Cyber Security Agency, and the Rwanda Inspectorate and Consumer and Competition Authority. Furthermore, the overarching policies are supported by sector-specific ICT strategies in agriculture, education, health and e-governance, amongst others.

- **Evidence-based** – Rwanda's policies and regulations are based on clear research, identified baselines and benchmarked targets. The policies are supported by strategies or implementation plans which have clear targets and metrics to measure progress and ultimately success.

- **Incentive-based –** There is a wide range of incentives for stakeholders to collaborate with Government to achieve identified targets, including tax incentives and special economic zones (SEZs). Implementation of these is key.

- **Outcome-based –** The strategies and roadmaps clearly articulate the desired outcomes which are set out in performance contracts, with targets linked to the national objectives.

- **Adaptive, balanced and fit for purpose –** The positioning of Rwanda as a progressive "test and learn" environment where innovation and entrepreneurship are welcomed and nurtured is supported in the ICT sector by the presence of regulatory sandboxes. This allows Rwanda to embrace flexibility in the regulatory space, in particular vis-à-vis the treatment of emerging technologies and new services, such as electric cars for e-hailing services (Volkswagen and Yego), drones for e-health services (Zipline), AI-based call centres for digital health care (Babyl) and solar-powered last-mile solutions (Vanu). Rwanda allows companies to trial innovations with limited geographic coverage or within targeted population groups.

7.3   Using appropriate tools

RURA, RISA, MINICT and the regulators, agencies and ministries with which they collaborate in other sectors have various tools available to facilitate the achievement of a digital economy and a knowledge economy. These include:

- **Good governance and regulation** – RURA, as a multisector regulator, displays high levels of transparency and accountability. Where there is overlap with other regulators it enters into both formal and informal arrangements with them to manage potential conflict; this includes memoranda of understanding as well as good working relationships. It has also put into place rules and regulations that will encourage innovation to the extent that it helps the country to meet its developmental goals.

- **Metrics for market performance are clearly identified and set out in the relevant policy instruments –** Targets set in the various policies, strategies and implementation plans are clear, as are deadlines and associated budgets for most strategies. While collaboration is indisputable, there may be a need to improve coordination across the various policies, strategies and implementation plans to avoid duplication and overlaps that might lead to inefficiencies.

- **Connectivity mapping** – Rwanda has mapped national connectivity and put into place significant supply-side programmes to increase universal service and access to networks in the country. The 4G wholesale open access network is but one such project.
- **Strategic plans and implementation plans supporting each of the policies that has been enacted** – In addition to ICT policies and strategies for key sectors, this concerns in particular the seven sectors identified in Smart Rwanda 2020.
- **Rwanda has all of the key legal tools in place** – Laws on data protection, privacy, and open data are in place, as are consumer protection mechanisms, especially with the publication this year of the Data Protection Law. This should reassure Rwandan consumers and perhaps increase willingness to use ICTs and new services such as Irembo. This will be critical for increasing the usage and uptake of ICTs, which remain low despite good network coverage.

7.4 Avoiding unintended consequences: policy risks and recommendations

7.4.1 Gaps in achieving desired impact

Rwanda is well equipped to achieve successful G5 regulation and regulatory approaches compared to many other countries – its policies, plans and institutional framework are robust. The high degree of mobile coverage, cross-sectoral e-government projects such as Irembo, and innovative ICT solutions such as drone technology for e-health and well-regulated mobile money regimes are proof of effective policy and regulation. Nonetheless, the policy outcomes on the demand side do not meet expectations. This is seen in the relatively low mobile penetration rate of 76 per cent (ITU, 2019), an Internet usage rate of 22 per cent (Government of Rwanda), and mobile broadband penetration of 42 per cent. Despite the successes achieved on the supply side and in terms of the institutional framework and policies and legislation, there are gaps in policy implementation and regulation which appear to be inhibiting uptake and usage.

Some of the challenges identified by the ICT Hub Strategy include:

- the need to increase awareness of the benefits of ICT within the population;
- the need to develop a labour force highly skilled in ICT; and
- the need to secure funding for the various programmes and strategies – the fledgling private sector has not yet grown enough to make the ICT sector broadly independent of government and donor funding.

7.4.2 Policy and regulatory recommendations for moving towards G5 regulation

Given Rwanda's political commitment to a digital future, the country's progressive ICT-centred policies and strategies, and its strong institutional framework, the persistence of the above-mentioned challenges is an anomaly. Some of the areas in which Rwanda can consider strengthening its frameworks to achieve G5 regulation include:

- **Increase the focus on universal service and access** – the programmes are in place, the services are set up, however the people need to be connected and the programmes and initiatives need to be adequately financed. To this end, Rwanda should consider implementing measures to improve awareness, affordability and accessibility. A tangible approach could include the drafting of policies for mobile, audiovisual and web accessibility for persons with disabilities. Another priority should be increasing uptake and usage by women.

- **Improve vertical collaboration and include tools in polices, strategies and regulations** – Rwanda's framework is particularly strong because there is a high level of clearly articulated horizontal collaboration across government; however, collaboration between government on the one hand and business and citizens on the other can be strengthened. Self-regulatory and co-regulatory frameworks overseen by RURA and other sector regulators through MOUs and codes of conduct could facilitate innovation and buy-in by all stakeholders in Vision 2035 and 2050. While there is space in all the policies and regulations for collaboration across sectors, the frameworks make little mention of co-regulation and self-regulation design principles as a way of achieving the nation's goals and targets.

- **Increase consultation and collaboration beyond government and donors** – The development of policies and regulation should be based on consultation and collaboration to ensure buy-in by all stakeholders. In particular, consultation has to look beyond government and donors. This in turn will facilitate smooth implementation. Consultation with industry, academia, consumer associations and end users across the sectors is key for successful implementation of the vision. This will also play an important role in stimulating demand and ensuring that solutions are designed around user needs. Implementation of this recommendation should assist Rwanda to improve its performance on some key indicators which are not directly driven by government and thus not measured by Imihigo performance contracts, such as mobile penetration, Internet penetration and local content development.

- **Embrace the principle that data is gold** – RURA is well positioned to regularly collect data and publish reports on the state of the sector and the progress that is being made towards achieving national targets; such research and reporting can be done in collaboration with RISA and other affected sector regulators.

- **Regulatory impact analysis –** Decision-making can be supported by regulatory impact analyses before major decisions are made; again, consultation on these processes will benefit the process, the regulator and the market as a whole.

- **Encourage innovation and entrepreneurship by local companies**. The current sandboxes and collaborative regulatory measures attract international and well-funded businesses – from Volkswagen to Zipline. However, for smaller local start-ups to flourish, funding gaps need to be addressed and measures and incentives need to speak to their needs. This will result in much-needed job creation and help to close the digital skills gap.

- **Streamlining** – A potential risk for the implementation of Rwanda's digital strategy and its digitalization goals is that there may be too many discrete policies in place, making implementation, monitoring and evaluation difficult. While all policies are aligned to Vision 2050 and the Smart Rwanda Master Plan, they may not be directly aligned with each other. Excellent intra-governmental communication, focused on the entities involved in the implementation of a concrete policy, must not lose sight of the benefits of broader communication across the economy.

- RISA appears to have been created to mitigate this risk, but its role is in implementation and not policy-making. It is important therefore that MINICT undertake a review of all of the policies to ensure that they are aligned and that all of the building blocks are in place – in particular the regulatory foundations for which RURA is responsible.

Rwanda has made significant gains in pursuing its vision of building a digital society and knowledge economy over the last 20 years. The policy and institutional framework aligns with next-generation regulation in that it demonstrates a clear and deliberate approach to using broadband and digitalization to achieve national, regional and global goals, including the SDGs. Despite a strong and forward-looking foundation, there are a few areas, outlined in this high-level briefing document, in which Rwanda can consider strengthening its policy, regulatory and institutional framework and ensuring ubiquitous broadband connectivity, accompanied by high levels of ICT and digital adoption by the population.

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