# Burundi
# Digital Economy Assessment

WORLD BANK GROUP
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DE4A Digital Economy for Africa

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# About the DE4A Assessment

**An assessment of Burundi's digital economy has been launched as part of the World Bank Group's Digital Economy for Africa (DE4A) Initiative**, which leverages an integrated and foundations-based diagnostic framework to examine the present level of digital economy development across Africa. The assessment maps the current strengths and weaknesses that characterize the national digital economy ecosystem in Burundi as well as identifies the challenges and opportunities for future growth.

**Digital transformation is rapidly re-shaping our global economy**, permeating virtually every sector and aspect of daily life – changing the way we learn, work, trade, socialize, and access public and private services and information. In 2016, the global digital economy was worth some USD 11.5 trillion, equivalent to 15.5 percent of the world's overall Gross Domestic Product (GDP). It is expected to reach 25 percent in less than a decade, quickly outpacing the growth of the overall economy. However, countries like Burundi are currently capturing only a fraction of this growth potential and need to strategically invest in the foundational elements of their digital economy to keep pace, and avoid being left behind.

The overarching analytical framework that shapes this assessment is guided by the premise that **five foundational digital elements** create the building blocks for unlocking digital transformation in Burundi, and thus determine the country's ability to build a robust digital economy:

1. **Digital Infrastructure** that provides the means for people, businesses, and government to get online, and subsequently access local and global digital services, thus effectively embedding users in the global digital economy. Broadly speaking, digital infrastructure consists of high-quality, accessible and affordable connectivity services, but also includes internet of things and data centers, as well as institutions and rules that foster a competitive telecommunications market.
2. **Digital Skills** that support the creation of a digitally savvy workforce. These are critical to building a robust and competitive digital economy, where innovative services, industries and business-models can emerge. Broad-based digital literacy and basic skills acquisition are instrumental to supporting wide adoption and use of digital products and services by the average consumer, and hence critical to ensuring digital inclusion. However, the level of intermediate, advanced and highly specialized digital skills will determine Burundi's ability to embrace digital innovation.
3. **Digital Platforms** that enable digital transactions and exchange, support new digital businesses and service delivery models. Related systems, applications and services thus have the power to transform the way people, government, businesses and civil society interact with each other in all aspects of life. Digital platforms help create economies of scale and leverage network effects to create value and support productivity gains.
4. **Digital Financial Services** (DFS) that provide individuals and households with convenient and affordable means to pay, as well as to save and borrow, using digital tools and platforms. Firms can leverage DFS to transact more easily with their customers and suppliers, as well as to build digital credit histories allowing access to finance. Governments can use DFS to increase efficiency and accountability in various payment streams, including for the disbursement of social transfers and receipt of tax payments. Digital payments are often the entry point for DFS and provide the "rails" through which additional products and use-cases can be developed.
5. **Digital Entrepreneurship** and innovation ecosystem that helps bring the digital economy to life and accelerate digital transformation – with both young ventures and innovators helping to generate new products and services that leverage technologies and digitally-enabled business models, as well as traditional industries adopting related solutions – contributing to net employment, enhanced competitiveness and productivity. Digital entrepreneurship thus helps expand products and services on offer but can also create new markets.

In addition, several **cross-cutting themes or areas** shape these foundational elements, which determine Burundi's ability of create an enabling institutional and policy environment. A clear strategy and strong leadership are both needed to spearhead the agenda at national level. Equally, the digital economy creates new legal and regulatory challenges, such as protecting consumers and their right to privacy, supporting cybersecurity and data protection, as well as effective taxation and competition, which need to be effectively addressed to ensure that innovative services continue to emerge, and guarantee their safe and affordable access. Moreover, for all Burundians to reap the digital dividends associated with the digital economy, it needs to be inclusive to ensure that anyone, regardless of age, gender, income and geography has the ability to access digital tools and services.

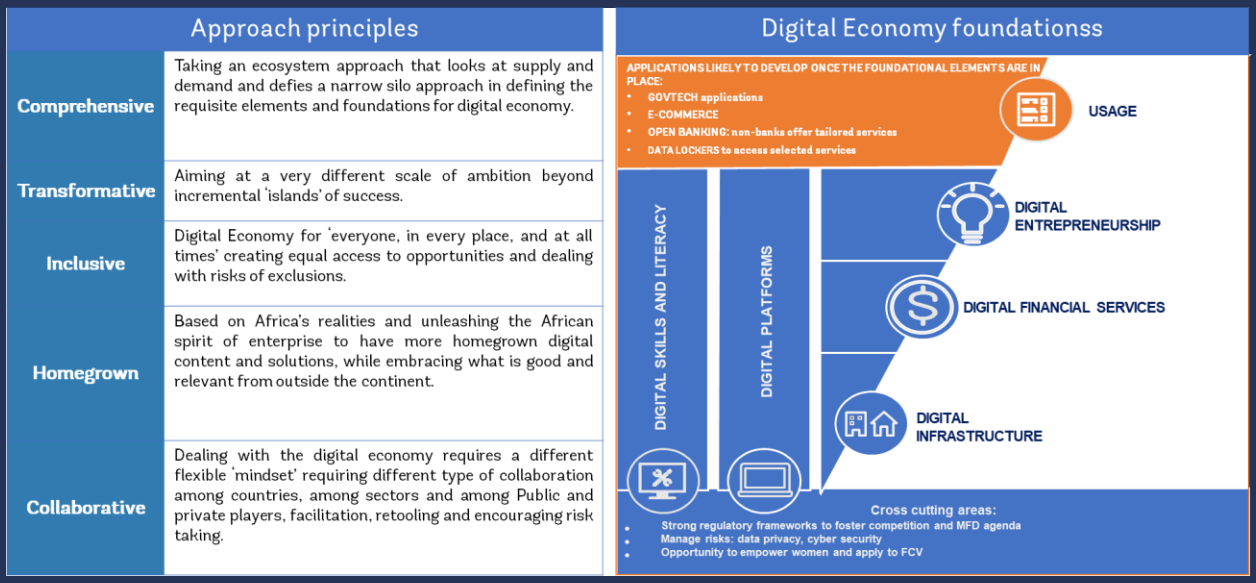


Figure 0.1: Approach and foundations of the DE4A Initiative

**The DE4A Initiative forms part of the World Bank Group's support for the African Union's Digital Transformation Strategy (DTS) for Africa**. As part of the DTS, ambitious, high-level targets have been established for all five foundational pillars of the digital economy, articulated in the DE4A assessment framework, as a way to define and measure success against the overarching goal of ensuring that every individual, business and government is digitally enabled by 2030. Many of these targets have in turn been embedded in the World Bank Group's IDA19 Commitments.

Table 0.1: High-level targets of the African Union's Digital Transformation Strategy

| DIGITAL INFRASTRUCTURE | DIGITAL SKILLS | DIGITAL PLATFORMS | DIGITAL FINANCIAL SERVICES | DIGITAL ENTREPRENEURSHIP |
|---|---|---|---|---|
| Universal Internet network coverage | All 15-year-old students with basic 'digital skills' competencies | Doubling of Online Services Index rating for all Governments | Universal Access to Digital Financial Services | Tripling the number of new digitally-enabled businesses created annually |
| Affordable Internet for all at less than 2% of GNI per capita | 100,000 graduates in advanced digital skills programs annually | All individuals are able to prove their identity digitally | Africa-wide payments infrastructure platforms in place | Financing for Venture Capital to reach .25% of GDP |
| Interim Milestone Doubling broadband connectivity by 2021 | | At least 50% of the population regularly uses the Internet to access Government or Commercial services | | |

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# Acknowledgements

This report was researched and prepared by a cross-sectoral task team, led by Isabella Hayward (Digital Development Specialist) and comprising of experts from across the World Bank Group (WBG). Core team members included Gabriel Negedu David (Digital Development Specialist), Amina Debissa Denboba (Education Specialist), Fidele Nindagiye (Education Specialist), Marieta Fall (Public Sector Senior Specialist), Bonheur Buconyori Ngabire (Private Sector Specialist), Alphonsus Nji T. Achomuma (Senior Financial Sector Specialist), Minakshi Ramji (Operations Officer - IFC), Prosper Niyongabo (Consultant), and Boury Ndiaye (Program Assistant). The team was supported by Clément Gévaudan (Consultant, Digital Development), who also helped compile this report.

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# Diagnostic Methodology

## Data collection

An in-country kick-off and **fact-finding mission** was undertaken in February 2020. In addition to **desk research** conducted, this mission allowed for broad-based stakeholder consultation with both the public and private sector, as well as civil society and development partners. The following **stakeholders were consulted** as part of the assessment:

- **Public sector**: Ministry of Youth, Posts and ICT, and the Executive Secretariat for ICT (SETIC); Ministry of Finance, Budget and Economic Cooperation; Ministry of Education and Training; Ministry of Higher Education and Scientific Research; Ministry of Labor and Employment; Ministry of Commerce, Industry and Tourism; Ministry of Energy and Mining; Ministry of Environment and Agriculture; Ministry of Social Affairs; Ministry of Public Health; Central Bank; Telecommunications Regulatory and Control Agency (ARCT); Universal Service Fund for ICT; Burundi Agency for Youth Employment; National Posts Administration; Investment Promotion Agency; Burundi Employment Office.
- **Private sector**: Afriregister; Aser Technologie; Compunet; GJ Tech; INGO Tech; Mediabox; Rubeya & Co Advocates; Utracom; Ubuviz; E-Soko.com; Pesbay.com, e-planning, INGO Group / INGPMAG; Eagle Group; InterImmo; and Jumia Burundi;.
- **Incubators and accelerators**: BujaHub – Save African Youth Campaign/Miss Burundi Tech; TradeMark East Africa; Burundi Business Incubator
- **Telecommunications sector**: Burundi Backbone System (BBS); Econet; Lumitel; Onatel; SMART Burundi; USAN, Spidernet,
- **Financial sector**: BANCOBU; BI-SWITCH; Burundi Bankers' Association (ABEF); Burundi Insurers' Association; Ecobank; Interbank Burundi; Lumicash; Microfinance Institutions Network (RIM); Payway; Rural Microcredit Fund; Auxfin,
- **Education sector**: National School of Administration (ENA); Higher Institute of Business Management; Higher Institute of Management and IT; University of Burundi; University of Great Lakes
- **International / regional organizations**: African Development Bank; Belgian Development Agency; European Union; Embassy of France; UN WOMEN

Analysis presented also draws on **regional and global benchmarking**, based on standardized indicators that form part of the DE4A diagnostic methodology. The analysis also draws on government statistics and data shared by the private sector.

## Limitations and data gaps

Given the nascent state of Burundi's digital ecosystem, there is a paucity of reliable data across the board, in relation to the digital economy. The report thus draws heavily on data shared by stakeholders consulted. The diagnostic also draws on others past World Bank diagnostics undertaken, wherever possible, to avoid interview fatigue.

# List of acronyms

| | |
|---|---|
| A4AI | Alliance for Affordable Internet |
| ABEF | Association des Banques et Etablissements Financiers du Burundi |
| AI | Artificial Intelligence |
| AML | Anti-Money Laundering |
| API | Application Program Interfaces |
| ARCT | Telecommunications Regulatory and Control Agency |
| ARMP | Regulatory Authority for Public Contracts |
| ATM | Automated Teller Machine |
| ATS | Automated Transfer System |
| AU | African Union |
| B2B | Business-to-Business |
| BBI | Burundi Business Incubator |
| BBS | Burundi Backbone System |
| BERNET | Burundi Education and Research Network |
| BIF | Burundian Franc |
| BLB | Burundi Large Bande |
| BPO | Business Process Outsourcing |
| BRB | Banque de la République du Burundi |
| BTS | Base Transmitter Station |
| CERT | Computer Emergency Response Team |
| CICO | Cash-in Cash-out |
| CNSI | National Commission for Information Society |
| COMGOV | Government Communication |
| CTI | Centre de Traitement Informatique |
| DB | Doing Business |
| DE4A | Digital Economy for Africa |
| DFS | Digital Financial Services |
| DLGF | Digital Literacy Global Framework |
| DRC | Democratic Republic of Congo |
| DTS | Digital Transformation Strategy |
| EAC | East African Community |
| EASSy | East African Submarine Cable System |
| EGDI | E-Government Development Index |
| EMIS | Education Management Information System |
| ENA | Ecole Nationale d'Administration |
| EU | European Union |
| FCV | Fragility, Conflict and Violence |
| FSP | Financial Service Provider |
| FTTP | Fiber-To-The-Premises |
| G2B | Government-to-Business |
| G2C | Government-to-Citizen |
| G2P | Government-to-Person |
| GB | Gigabyte |
| GCI | Global Competitiveness Index |
| GDP | Gross Domestic Product |
| GIS | Geographic Information System |
| GIZ | German Development Agency |
| GNI | Gross National Income |
| GoB | Government of Burundi |
| GSMA | Global System for Mobile Communications Associations |
| GUE | Guichet Unique Electronique |
| GUP | Guichet Unique Provincial |
| HEI | Higher Education Institution |
| HR | Human Resources |
| ICT | Information and Communication Technology |

| | |
|---|---|
| ID | Identification |
| IFC | International Finance Corporation |
| IFMIS | Integrated Financial Management Information System |
| IMIS | Integrated Multi-sectoral Information System |
| IoT | Internet of Things |
| IP | Internet Protocl |
| ISP | Internet Service Provider |
| ISTEEBU | Burundi's Institute of Statistics and Economic Research |
| IT | Information Technology |
| ITS | International Telecom Services |
| ITU | International Telecommunication Union |
| IUCEA | Inter-University Council for East Africa |
| IXP | Internet Exchange Point |
| KYC | Know Your Customer |
| MAN | Metropolitan Area Network |
| MDA | Ministries, Departments or Agencies |
| MFI | Microfinance Institution |
| MIS | Management Information System |
| MNO | Mobile Network Operators |
| MoYPICT | Ministry of Youth, Posts and ICT |
| MSME | Micro, Small and Medium-sized Enterprises |
| MSPLS | Ministry of Public Health and Fight Against AIDS |
| NFIS | National Financial Inclusion Strategy |
| NGO | Non-Governmental Organization |
| NREN | National Research and Education Networks |
| OBR | Burundi Revenue Authority |
| OLUCOME | Observatoire de la lutte contre la corruption et les malversations économiques |
| ONA | One Network Area |
| P2P | Peer-to-Peer |
| PAGGF | Management and Land Governance Project |
| PASEC | Programme d'Analyse des Systèmes Educatifs de la CONFEMEN |
| PFM | Public Financial Management |
| PKI | Public Key Infrastructure |
| PND | Plan National de Développement |
| PNDIS | Plan National de Développement de l'Informatique de Santé |
| PNDTIC | Politique Nationale de Développement des Technologies de l'Information et de la Communication |
| PRH | Paie et Ressources Humaines |
| PSP | Payment Service Provider |
| PTO | Public Telecommunication Operator |
| R&D | Research and Development |
| RIM | Réseau des Institutions de Microfinance |
| RoC | Republic of Congo |
| SDM | Single Digital Market |
| SETIC | Secrétariat Exécutif des TIC |
| SIF | Land Information System |
| SIGEFI | computerized system for budget management |
| SMART | specific, measurable, actionable, relevant and time-bound |
| SME | Small and Medium-sized Enterprises |
| SOC | Security Operations Center |
| SSA | Sub-Saharan Africa |
| STEM | Science, Technology, Engineering, and Math |
| STI | Science, Technology and Innovation |
| SWOT | Strengths, Weaknesses, Opportunities and Threats |
| TTCL | Tanzania Telecommunications Company Limited |
| TVET | Technical and Vocational Education and Training |
| UIS | UNESCO Institute for Statistics |
| UMVA | Universal Method of Value Access |
| UN | United Nations |
| UNCTAD | United Nations Conference for Trade And Development |
| UNDESA | United Nations Department for Economic and Social Affairs |

| | |
|---|---|
| UNDP | United Nations Development Program |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNICEF | United Nations Children's Fund |
| UNWOMEN | United Nations Entity for Gender Equality and the Empowerment of Women |
| US | United States |
| USD | United States Dollar |
| USF | Universal Service Fund |
| USSD | Unstructured Supplementary Service Data |
| VAT | Value Added Tax |
| VOIP | Voice Over IP |
| WB | World Bank |
| WBG | World Bank Group |
| WDI | World Development Indicators |
| WEF | World Economic Forum |
| WIPO | World Intellectual Property Organization |

# Executive Summary

**COVID-19 has highlighted the need for accelerating digital adoption in Burundi**. Ultimately, low digital adoption means that the country is ill-equipped to leverage digitally enabled social distancing policies. Moving forward, prioritizing measures that increase digital adoption will help boost Burundi's resilience to future crises. Greater digital adoption would, for example, allow for economic exchange to continue to take place via e-commerce and digital payments, reducing market disruption, support business continuity through home-based work, and support continued delivery of critical basic services such as distance learning and e-health systems.

**Increasing internet access and supporting greater uptake remains the most pressing priority, and the first step, to accelerating digital transformation in Burundi.** According to GSMA, Burundi's unique mobile broadband penetration rate is just 13.2 percent; there is a need to ensure that its population is equipped with the connectivity, devices and skills to fuel widespread adoption of digital technology. In 2020, Burundi's smartphone penetration rate remains low, with device cost a key factor. With 90 percent of its population dependent on the agriculture sector, and 87 percent living in rural areas, efforts to boost digital adoption need to focus heavily on expanding access in rural areas. In addition, currently, digital skills and local capacity for distance learning remain low. While the use of digital payments is growing, there is ample scope for scaling up contactless digital transactions and G2P payments to low-income households and front-line public workers. Furthermore, in the face of restrictions on movement and physical contact, Burundi requires robust e-government capabilities to guarantee the continued delivery of critical services.

**Burundi's current sectoral strategies acknowledge the importance of investing in digital technology. However, these lack an overarching approach with an actionable roadmap and clear resources behind it.** Digital transformation requires high-level political leadership, and effective institutional coordination across Government and the wider ecosystem. The digital economy in Burundi is characterized by poor coordination between stakeholders and a lack of key regulations, making it unconducive to supporting digital adoption and private sector-led innovation on a larger scale. Improving inter-ministerial coordination and enforcing a whole-of-government approach at the highest level of Government, while seizing collaboration opportunities at the regional level will be key to ensuring that Burundi can capitalize on the benefits stemming from greater digital adoption.

**Burundi's mobile network coverage and mobile broadband uptake continues to be characterized by a stark urban-rural divide**. While recent World Bank support has enabled the roll-out of a national backbone network, lowering wholesale prices and enabling growth in the telecommunications sector, there are sizable gaps in last-mile supply networks currently provided by four competing mobile network operators in the market. This prevents many users from gaining access. Internet speeds are slow, with 66 percent of connections on 2G, and there is a significant gender gap in access. Improving universal coverage will require a coordinated effort and a strong push to ensure that no one is left behind. With over 70 percent of the population living with less than USD 1.90 per day and the inadequate state of rural infrastructure, there is a need to stimulate the market from both the demand and supply sides, with a heavy focus on rural connectivity expansion. Additionally, as a landlocked country, Burundi would benefit from the entry of independent wholesale broadband operators and the creation of a local data center market, in order to reduce the price of international connectivity.

**A series of regulatory issues hamper the development of a more competitive telecoms market in Burundi; to unlock further growth, these must be tackled head on.** Further regulatory action is needed to tackle existing exclusivity provisions, which result in de facto monopolies in some market segments, high taxation and a growing tendency for vertical market integration. The use of private gateways has had an adverse impact on both the voice and data market. Moreover, there is growing concern from internet service providers, that the state-backed backbone operator, BBS, initially designated as a wholesale provider, is now also competing in the retail data segment, contrary to its founding charter.

**Digital skills development is a key part of Burundi's 2020 education strategy.** It is now crucial that the education line-ministries' strong commitment to this agenda is operationalized and implemented in practice. Stronger inter-ministerial coordination is required to address the gaps in the education system and ensure that key enablers are in place – internet, devices, and electricity etc. – that would allow digital skills to be embedded in the education system. While foundational digital skills are formally mandated at both lower and upper secondary school level, few schools are able to deliver effectively this training. At present, there is no data collection system in place to measure the availability and quality of digital skills training. Burundi's adult literacy rate of 68 percent suggests nevertheless a moderate digital skills gap, as literacy is typically considered a pre-requisite for foundational digital skills to allow to use internet and other digital services. However, there is both a literacy gender gap and education gender gap – women receive on average 2.7 years of schooling compared to 3.6 years for men. According to PASEC 2015, Burundi has some of the best results in mathematics for West and Central Africa, but low access to electricity and internet in schools, as well as difficulties in finding appropriately trained teachers, constitute key constraints to building out a critical base of digital skills for the new generations through the formal education system. Stronger linkages with the digital ecosystem innovation community are needed, as well as partnerships with telecom firms to expand opportunities for training. Burundi should continue to leverage rapid skilling programs through initiatives such as the Digital Skills for Africa. At all levels, both the formal education system and alternative delivery models must be applied to build foundational digital skills that are needed for all other pillars of the digital economy.

**Digital platforms are paramount in connecting people, businesses and the Government – enabling both transactions and the exchange of information, goods and services in more efficient and convenient ways.** In Burundi, digital platforms can be instrumental in connecting rural communities with urban hubs, providing new and cost-effective ways to expand service delivery to remote parts of the country, as well as connecting rural farmers to global value chains and markets.

**On the public sector side, ensuring a whole-of-government approach to its early-stage e-Government initiatives will be critical.** The current systems introduced are fragmented, characterized by the use of incompatible systems and inconsistent standards, limiting prospects for greater interoperability. Moreover, access to information and capacity for e-service delivery also need to be improved. The Government has developed an emerging online presence, but it is largely restricted to offering "information-as-a-service" through a handful of informational websites. Focus on back-end system has generated few front-facing services.

**The use of digital platforms in the private sector is very low** and primarily revolves around solutions for digital payments, with minimal success for Micro, Small and Medium Enterprises (MSME) to date. Challenging last mile logistics, low user awareness and confidence, and low transaction volumes also pose significant challenges for incoming private sector platforms. In general, oversight and regulation to mitigate risks around data protection, privacy and market concentration are needed, alongside efforts to ensure that Burundi's digital divide is not exacerbated.

**While Burundi's levels of financial inclusion are among the lowest in SSA, there has been recent developments in Digital Financial Services,** due to an expansion in mobile money services and enabling regulatory reforms, as well as a relaxing of provisions for related services. At present, mobile money services are largely limited to person-to-person (P2P) transfers, Cash-In-Cash-Out (CICO), airtime purchase and other payments. There are opportunities to scale up G2P payments and leverage development partners' programs to mainstream digital payment solutions. However, significant constraints exist, including access to mobile devices and effective safeguards.

**At present Burundi's Digital Entrepreneurship sector remains embryonic, hampered by barriers such as limited ecosystem support and weak access to financing.** There is currently just one tech hub, with limited resources to attract and support innovators. Burundi's population has had little exposure to digital solutions, and limited digital adoption has created a very small addressable market of digitally savvy consumers. Many entrepreneurs are diaspora, attempting to foster a culture of innovation in Burundi. Low-quality and expensive connectivity is a major barrier in developing digitally enabled businesses. Weak access to early stage financing, leaves would-be entrepreneurs grasping for support

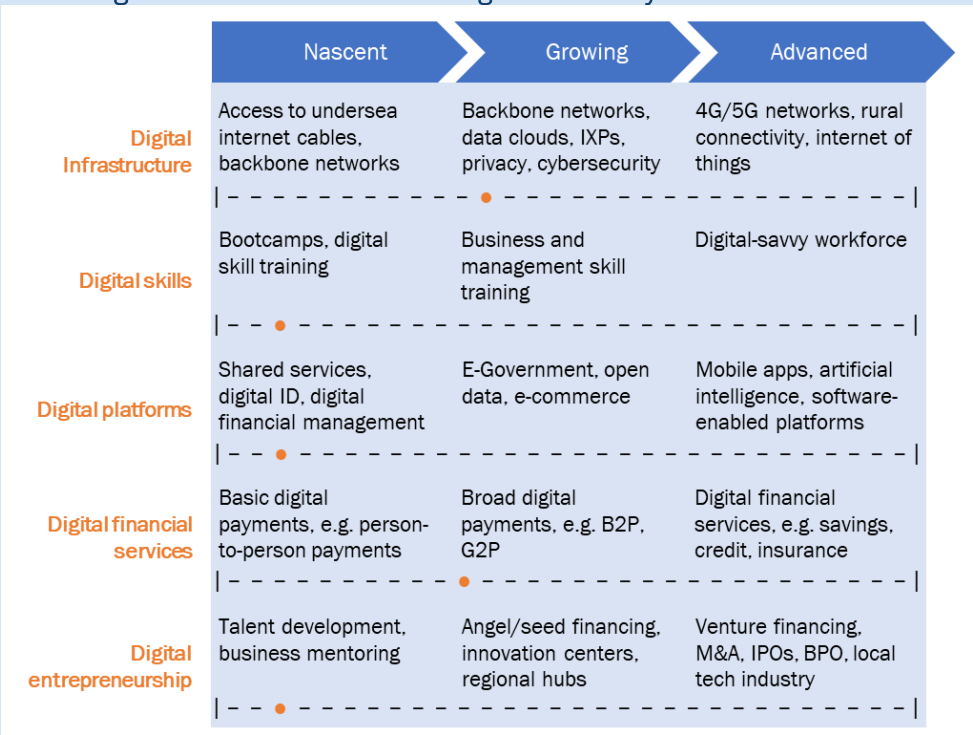
from international donors or make them quickly disappear from the market. There are almost no dedicated strategies, programs or regulations to accompany digital transformation in the private sector.

**By supporting greater productivity and market-linkages, digital technology has the potential to transform the agricultural sector in Burundi.** Currently contributing 29 percent to the nation's GDP, there are encouraging examples of nascent AgTech, but there is scope for further scale-up. Global experience suggests that digital technology could significantly increase productivity in agriculture through economies of scale, resulting in larger yield and economic benefits. In turn, it could improve smallholder farmers' efficiency and competitiveness by reducing the costs associated with linking producers and buyers; lessening information asymmetry between smallholder farmers and middlemen, and helping farmers make more precise decisions on resource management.

**Given its small market size, Burundi would benefit greatly from the establishment of a Single Digital Market (SDM) in East Africa**, allowing it to become part of a deeply integrated and dynamic digital investment, innovation and trade hub**.** Burundi should be at the forefront of efforts to create a larger, digital market in the region; such an initiative would both help decrease the costs for digital services for local consumers, by increasing competition, but also create room for Burundian digitally enabled firms to quickly scale in a larger regional market. A competitive regional digital ecosystem can drive a reinforcing cycle of economic growth, investment, innovation, job creation, and improved service delivery.

**Whether through the provision of citizen-centric digital public services or increased digital financial inclusion or a dynamic digital innovation ecosystem, there is a breadth of opportunities that can stem from incrementally supporting Burundi's digital transformation.** However, to date, progress has been slow, constrained by the lack of strong central leadership of the digital agenda, a lingering urban- rural digital gap, and a lack of cohesive strategies by donors. Through a whole-of-government approach, overarching and operationalized digital transformation strategies and improved rural access, digital transformation can be fostered. Developing this capacity will require a series of cross-cutting efforts in order to enhance human capital both in the public and private sectors, and align the interests of all citizens, businesses and government stakeholders in Burundi.

Figure 0.2: Current state of Digital Economy Pillars in Burundi



**Based on report findings, the following high-level recommendations are made:**

Table 0.2: High-level recommendations

| Action | Time Frame | Priority |
|---|---|---|
| Institutional Framework and Governance | | |
| Objective 1: Integrate and operationalize existing strategies | Short | High |
| Objective 2: Strengthen institutional coordination as a whole-of-government | Short | High |
| Objective 3: Provide foundational laws and regulations for the digital economy | Medium | High |
| Digital Infrastructure | | |
| Objective 1: Improve access to existing infrastructure and invest in new networks | Short | High |
| Objective 2: Boost demand through initiatives on affordability, purchasing power and awareness | Short | High |
| Objective 3: Strengthen capacity for regulation of data protection and cybersecurity | Medium | Intermediate |
| Digital Skills | | |
| Objective 1: Build the foundations for digital skills development in the education system | Short | High |
| Objective 2: Align supply and demand for digital skills in labor markets | Short | High |
| Objective 3: Foster collaborations with international partners and the private sector | Medium | Intermediate |
| Digital Platforms | | |
| Objective 1: Improve the legal, policy and regulatory environment for digital platforms | Medium | High |
| Objective 2: Strengthen key stakeholders in the governance of digital transformation | Short | High |
| Objective 3: Build the technical standards and foundations for digital platforms | Short | High |
| Digital Financial Services | | |
| Objective 1: Improve the market environment for digital financial inclusion | Short | High |
| Objective 2: Build the infrastructure for digital financial services | Short | High |
| Objective 3: Build oversight capacities of the financial sector | Short | High |
| Digital Entrepreneurship | | |
| Objective 1: Build the digital entrepreneurship ecosystem | Medium | High |
| Objective 2: Reform the business environment for improved competition | Short | High |
| Objective 3: Develop networking platforms for all stakeholders to engage in | Long | Intermediate |

A full list of recommendations can be found in Annex 2.

# 1 Introduction

## 1.1 Country at a glance: Burundi

**The Republic of Burundi (Burundi) is a small, landlocked and densely populated country located in East Africa, in the heart of the Great Lakes region** (Table 1.1). Burundi shares borders with Rwanda to the north, Tanzania to the east and south, and the Democratic Republic of Congo (DRC) to the west. It is the third most densely populated country in Sub-Saharan Africa (SSA) with an estimated 435 inhabitants per km$^2$ for the population of 11 million people. It is also the least urbanized country in SSA, with only 13 percent of the population residing in urban areas. Ensuring that Burundi's large rural communities are connected will thus be critical to supporting digital inclusion. Moreover, Burundi's population is growing rapidly, at more than 3 percent per year and is expected to double by 2040 – creating a growing demographic burden and youth bulge.[1]

**In 2020, the UN estimates that 64 percent of the population is less than 24 years old.** This burgeoning youth population needs to be equipped with the requisite skills and tools to pursue job opportunities and thrive in tomorrow's digital economy. However, present enrollment and completion rates, as well as quality of education, hamper learning outcomes across the board, making supporting this transition a lingering challenge. Based on 2014 figures from the UNESCO Institute for Statistics (UIS), a mere 11 percent of the population (aged 25 and older) had completed primary education. While interest in technology among young people is anecdotally perceived as being high, Burundi's youth are far from being digitally enabled, as they often lack the means to acquire devices and purchase data services.

**Burundi remains one of the poorest countries in the world.** In 2018, its gross domestic product (GDP) per capita was a low USD 271, placing Burundi at the bottom of the low-income category. Burundi had the fourth highest poverty headcount in 2014, with an estimated 72.9 percent living below the poverty line of USD 1.90 per day - nearly double the average for SSA and low-income countries. This translates to weak purchasing power, that typically has a ripple effect on access to technology.

Table 1.1: Burundi at a glance – key top-level figures and map

| | |
|---|---|
| **Population** (2018) | 11.2 M |
| **GDP** (2018) | $3.07 B |
| **Urban population** (2018) | 13% |
| **Adult literacy rate** (2017) | 68.4% |
| **Rural population with access to electricity** (2017) | 1.7% |
| **Labor force participation rate** (2019) | 79.2% |
| **Labor force participation rate, female** (2019) | 80.4% |
| **Agriculture jobs in total employment** (2019) | 92% |
| **Doing Business Index, score 1-100** (2020) | 46.8 |
| **Digital Adoption Index, score 1-100** (2016) | 26.1 |

Source: World Bank World Development Indicators (WDI), World Development Report 2016.

**Agriculture is the bulwark of Burundi's economy.** The agriculture and forestry sector represented 29 percent of the country's GDP and a striking 92 percent of total employment in 2018, making Burundi the most dependent country on this sector in SSA, and highly vulnerable to price fluctuations. Economic diversification and agriculture productivity gains thus both emerge as key strategic priorities

[1] World Bank (2018). *Republic of Burundi – Addressing Fragility and Demographic Challenges to Reduce Poverty and Boost Sustainable Growth.* Systematic Country Diagnostic.

for the structural transformation of the country. With limited application of agriculture technology, land degradation and climate change place pressure on arable land, which has resulted in yields that fail to meet domestic demand. Burundi continues to have one of the highest rates of stunting in the world, affecting more than 55 percent of children under five years old.[2] The potential role that technology could play in supporting the agriculture sector development is discussed further in In-Focus Section 2.

**Multi-faceted fragility continues to characterize Burundi's present development trajectory, but this should not prevent investment in the digital economy**. The World Bank (WB) Fragility, Conflict and Violence (FCV) strategy highlights the powerful impact that digital technology adoption can have in FCV settings like Burundi.[3] Burundi's fragility stems from a range of political, climatic and economic drivers that often are heavily intertwined and mutually reinforcing.

**The 2015 political crisis interrupted a decade of growth and development, and severely impacting the business environment.** Domestic demand for goods and services slumped amidst acute insecurity – real GDP declined by 3.9 percent in 2015 and decreased by a further 0.6% in 2016, only starting to rebound in 2017. Fiscal deficit has remained a challenge, sitting above 5percent of GDP in 2016, creating real pressure on the Burundi Franc. This crisis has resulted in a refocus of aid on emergency response in lieu of external budget support and the continual aid injection that urban economy depends on.4 Undesirable weather patterns affecting agricultural crops and energy supplies have severely impacted the living standard of the population.

**Whether through the provision of public services closer to its citizens with digital platforms, or through increased financial inclusion enabled by digital financial services and dynamic digital ecosystems, Burundi stands to gain from a continued investment in the foundations of its digital economy.** However, the country faces significant demand-side constraints, due to the low-income level, weak digital literacy and challenges in supporting universal access on the supply side.

## 1.2 Snapshot of the Digital Economy in Burundi: key opportunities and barriers

**A snapshot of Burundi's digital ecosystem illustrates that the country presently only has nascent digital capabilities:**

- **Digital Infrastructure:** While the roll-out of a national fiber optic backbone network has helped bring thousands within closer proximity to broadband, gaps in last-mile supply networks still prevent many users from gaining access, translating into modest internet penetration figures. According to the ARCT, in Q4 2019 the penetration of fixed and mobile internet was respectively 0.04 and 9.68 percent, although 2020 GSMA figure are higher (13.2 percent unique mobile internet subscriptions). Most connections are on 2G speeds, which are not fast enough to develop advanced digital solutions. Ensuring effective market competition and regulatory transparency remains a challenge, in addition to stimulating higher demand.

- **Digital Skills are limited by weak digital literacy, a key demand-side barrier that prevents wider access to digital tools and services, alongside other factors such as device and services affordability, and access to local and relevant content.** The availability and quality of local digital skills training that supports more advanced and highly specialized digital skills is also limited, yielding a weak pipeline of digital talent. While the education sector is in the process of adopting new strategies to leverage information and communication technology (ICT) and enhance

[2] FAOSTAT Statistical Database 2016.
[3] World Bank. 2020. *World Bank Group Strategy for Fragility, Conflict, and Violence 2020–2025.*
[4] World Bank. 2018. Systematic Country Diagnostic, Burundi

education delivery, it faces structural constraints such as the lack of qualified teachers, lack of equipment and access to electricity in schools, as well as the absence of data and knowledge on digital skills levels and labor markets priorities.

- **Digital Platforms:** Advanced data-driven solutions are yet to fully penetrate the public and private sectors. While the Government has established a nascent online presence, there is no roadmap to implement a whole-of-government approach to e-government and invest in core shared infrastructure and services that supports movement to transactional and integrated e-service delivery. As a result, Government online services scored 29.9 out of 100 in the 2018 UN E-Government Development Index. On the private sector side, digital e-commerce platforms and new data-driven business models struggle with sustainability; with most closing down after a few years in action. The country ranked second to last (in 150$^{th}$ place out of 152) in the recent 2019 UNCTAD B2C e-commerce Index.

- **Digital Financial Services:** Similar to digital skills, data on Digital Financial Services (DFS) in Burundi is largely outdated: the latest Findex survey was carried out in 2014. Based on this data, Burundi still appear to have one of the lowest levels of financial inclusion in SSA, with only 6.9 percent of adults reportedly owning a bank account. Mobile money uptake, while growing, is yet to translate to universal financial inclusion and wider access to digital services. Several operators exist on the market, but the products offered do not necessarily match the needs of low-income customers. The Central Bank recently passed a law to create a special status for payment service providers (PSP), recognizing the critical role that non-banks can play in rolling out DFS.

- **Digital Entrepreneurship.** Despite a small group of startups and a very active incubator, BujaHub, there is no critical mass of digital entrepreneurs in Burundi. This market segment is much impacted by the high cost of electronic equipment and data, as well as the small market that currently exist for those potential digital solutions. Most entrepreneurs face difficulties in accessing credit and resort to startup competitions, which are still minimal at the national level. At present Burundi has no solutions for innovative financing such as venture capital or business angels. Therefore, while a small group of dynamic and dedicated actors is currently building Burundi's innovation system capacity, the lack of institutional support and financing solutions mean that it is difficult for these initiatives to reach a critical scale.

## 1.3 Structure of this Report

**Each chapter that follows starts with a summary of key messages, and concludes with an analysis of key strengths, weaknesses, opportunities and threats (SWOT) as well as summary of main recommendations.** Chapter 2 reviews cross-cutting factors that affect the strategic, institutional and regulatory environment for the digital agenda in Burundi. The report proceeds to explore the five foundational pillars of the digital economy, in more depth. Chapter 3 looks at the access, quality and usage of digital infrastructure, as well as the dynamics of the connectivity market, including what it will take to get more Burundians online. Chapter 4 discusses the current state of digital skills attainment and coverage. Chapter 5 analyzes the current application and scope for expanding the use of digital platforms – both in the public and private sector. Chapter 6 examines the state and uptake of DFS among individuals, businesses and by Government. Finally, Chapter 7 assesses the state of digital entrepreneurship and the culture of innovation in Burundi.

**The report also highlights a series of in-focus topics on key strategic issues**: (1) how Burundi can ensure digital inclusion, including how digital access can empower women; (2) what prospects there is for leveraging technology in agriculture, and (3) how Burundi could support regional integration to accelerate digital transformation, supporting transition towards a single digital market.

**The report concludes with a discussion of next steps, including a summary of recommendations.** These recommendations are intended for a wider audience, including government, the private sector and development partners. However, report finding are also likely to shape the World Bank Groups interventions on related topics moving forward.

# 2 Governance of the Digital Economy

Key messages:

- Burundi lacks a clear roadmap for implementing existing digital strategies adopted, many of which therefore remain merely aspirational.
- There is unclear leadership and weak government coordination of the digital agenda. Lead technical agencies such as SETIC lack both political clout and resources and are thus often side-lined.
- The digital economy ecosystem is largely characterized by a regulatory vacuum, making it unconducive to supporting digital adoption and innovation.

## 2.1 Importance of High-Level Leadership and Coordination for digital transformation

**Supporting digital transformation requires a high-level political commitment and effective institutional leadership and coordination across government, and the wider ecosystem.** A clearly articulated and shared vision and roadmap for supporting digital transformation needs to be internalized by all, and championed by Burundi's leadership at the highest level. Effective stewardship for the agenda is key, including a strong institutional framework with clearly defined roles and responsibilities, where responsible institutions / entities are equipped with the adequate (financial and human) resources and capacity to effectively execute their mandate(s). Notably, fragmentation in the leadership of the ICT function in the public sector is often one of the key obstacles to successful implementation of a whole-of-government approach to digital transformation. Burundi's institutional and strategic framework for digitalization can thus be considered just as important to the success of digital economy initiatives as the many technical aspects, making it a so-called critical analogue complement. [5]

**Effective coordination between stakeholders should be supported**: Government, the private sector, civil society and international partners. International best practices offer two main approaches for supporting effective leadership and coordination on the digital agenda.[6]

1. **Entrusting leadership to a supra-ministerial entity.** In most cases leadership is conferred to the highest political office through the introduction of an agency that reports directly to the President's or Prime Minister's Office. This model is currently being employed by Brazil, Chile, South Korea, Estonia, Luxembourg, Mexico, and Slovakia. This model helps ensure high-level leadership and supports centralized strategic coordination. Several variations of this approach exist depending on the degree of involvement of other ministers.

2. **Strategic coordination steered by a lead ministry.** This model is currently being employed by Belgium, the People's Republic of China, Japan, Poland, Portugal, Slovenia and Rwanda. Here too, there are several variants depending on the nature of the ministry in charge of this coordination: exclusively in charge of digital, having other areas of responsibility, or sharing its prerogatives with several other ministries.

[5] World Bank (2016). *Digital Dividends.* World Development Report 2016.
[6] OECD (2019). *Going Digital: Shaping Policies, Improving Lives.* OECD Publishing, Paris.

**The choice of the best configuration depends on local and contextual specificities – including available institutions and their capacity, administrative culture etc.** In Burundi, it will crucial to decide which approach is the best fit, as presently there is both a supra-ministerial entity and a line ministry level active in the digital space, as outlined below.

## 2.2 Diagnostic Findings: Governance of the Digital Economy

**While Burundi is rolling out its digital vision at the sectoral level, there is no integrated approach to bring together the various constituencies of the Government.** Coordinating digital transformation across Ministries, Departments and Agencies (MDA) is essential to maximizing the benefits of digital solutions pertaining to the real-time transfer of information, build-up of interoperable and shared services, and future implementation of data-driven services that can improve citizen-centric service delivery and promote efficient government operations using digital. This section explores the current institutional framework by looking at the strategies currently in place, which institutions are in charge of implementing them and what laws and regulations that have been enacted to operationalize these programs.

### 2.2.1 Vision and strategy for the digital economy

The strategic framework presently guiding Burundi's digital transformation can be found in two high-level documents: the National ICT Development Policy[7] and the National Development Plan[8].

**The National ICT Development Policy 2010-2025 – *"Politique Nationale de Développement des Technologies de l'Information et de la Communication"* (PNDTIC 2010-2025) – is the first and only strategic document to focus solely on how to support wider adoption of modern technology in a cross-cutting way.** The Policy is remarkably ambitious for a document initially prepared in 2010 – however, as demonstrated in this report, it remains largely aspirational; it aims for Burundi emerge as a "center of excellence" and a "regional reference in the ICT sector" by 2025. The Policy places the digital transformation strategy in the remit of the Ministry of Youth, Posts and ICT (MoYPICT) and reaffirms the role of key implementing agencies, including the Executive Secretariat of ICT (SETIC), the National Commission for Information Society (CNSI) and the Directorate General of ICT within the MoYPICT.

**The PNDTIC includes 73 different priorities, under 10 strategic headings, and targets cross-cutting topics** such as infrastructure, e-Government, private sector development in agriculture, industry and tourism, social development, research and development, digital finance and rural connectivity. Unfortunately, the institutions in charge of implementing the PNDTIC lack the capacity to do so, and most key performance indicators set are yet to be achieved (Table 2.1). The Policy also lacks a clear implementation roadmap to operationalize many of the proposals made.

Table 2.1: Status of selected indicators in the PNDTIC 2010-2025

| Indicator | Status |
|---|---|
| Train 50 percent of state officials in ICT | not achieved |
| Have at least 1,500 professionals trained in ICT | not achieved |
| Telephone and audiovisual coverage more than 90 percent guaranteed in all municipalities and census hills | not achieved |
| At least one multi-service tele-center per municipality | not achieved |
| Deploy a main national broadband infrastructure up to the commune level | achieved |
| One computer per census hill | not achieved |
| Postal coverage provided in all municipalities and other major centers | achieved |

[7] Government of Burundi (2010). *Politique Nationale de Développement des Technologies de l'Information et de la Communication du Burundi (2010-2025).* Available online at https://mintic.gov.bi/wp-content/uploads/2019/02/PNDTIC-BURUNDI_2010-14Mars_20111-1-A-1.pdf

[8] Government of Burundi (2018). *Plan National de Développement du Burundi 2018-2027.* Available online at http://www.presidence.gov.bi/wp-content/uploads/2018/08/PND-Burundi-2018-2027-Version-Finale.pdf

| Indicator | Status |
|---|---|
| Telephone accessibility within 5 km | achieved |
| Reduce the cost of 1 Mbps of international bandwidth to less than $1,000 / month | achieved |
| Adequate scope and structure of SETIC | not achieved |
| 80 percent of PNDTIC programs carried out | not achieved |
| Set up the intranet and e-government applications; Provide efficient online administrative services | not achieved |
| Develop and spread some applications in Kirundi before 2015 | not achieved |
| Encourage weekly radio or television programs related to ICT | not achieved |
| Implementation and monitoring of ICT indicators | not achieved |

Source: authors' consultations with stakeholders

**In addition, Burundi's general development objectives in the medium-term are now captured by the National Development Plan – "*Plan National de Développement 2018-2027*" (PND2018-2027).** The PND2018-2027 was adopted after the political turbulence of 2015 and is the latest truly cross-cutting strategy enacted by the Government. The Plan is centered around the idea of structural transformation – a clear fit with the digital economy agenda. However, while this plan acknowledges the role of ICT as an important lever in Burundi's structural transformation, it does not significantly build on the propositions of the PNDTIC 2010-2025, nor does it propose an actionable framework to support implementation. In fact, the PNDTIC is not referenced at all in Burundi's PND 2018-2027.

**The PND 2018-2028 describes digital technology as a cross-cutting foundational enabler that contributes to growth, mainly through human capital development, innovation and productivity gains.** This plan supports further infrastructure development, including additional roll-out of fiber optic and GSM networks. It also aspires to support the promotion of a 'digital culture', using both traditional media and through a series of sector-specific digital initiatives. These include embedding technology in research and innovation, as well as a focus on agricultural, educational, energy and environmental sectors. Finally, it endorses wider government digitalization, and inter alia suggests boosting the capacities and infrastructure of the National Posts Administration, and supporting the establishment of a national center for big data. While the PND 2018-2027 features many positive ideas for the digital economy, it is unfortunate that it did not seek to establish clear roles and set out the cross-cutting structure that Burundi needs to reap the benefits of digital transformation.

**The overall strategies are completed by sectoral strategies, which are listed in Table 2.2 below.**

Table 2.2: Sectoral strategies underpinning the development of ICT

| Strategy | Description |
|---|---|
| ARCT Strategic Plan – *Plan Stratégique 2016-2020*[9] | The ICT industry regulator, ARCT, anchors its 2016-2020 Strategy around the concept of developing an inclusive information society. It notes that ARCT is transforming along with the ICT sector in Burundi. The Strategic Plan notably includes issues related to rolling out universal access, provision of operator licenses and promotion of fair competition in the telecom market. It highlights the need to address regulatory gaps in areas such as data protection and cyber-security, which have not yet been addressed. |
| Burundi Broadband Strategy – *Stratégie Burundi Large Bande 2025* (BLB 2025) | The BLB 2025 was launched in 2017 after a series of lengthy consultations - however, many stakeholders believe it still requires further review and update. The strategy lacks an actionable framework, and does not focus on some key issues, such as ensuring universal access or providing additional metro fiber networks. |

[9] http://www.arct.gov.bi/images/planstrategique/planstrategique.pdf

| Strategy | Description |
|---|---|
| 2nd National e-Health Development Plan – *Plan National de Développement de l'Informatique de Santé 2020-2024* (PNDIS II)[10] | The PNDIS II is one of the few sectoral strategies to have been adopted and successfully rolled out the use of digital technology at a sector level. The plan provides a detailed roadmap for implementing data architecture in the health sector, including the establishment of a data center within the Ministry of Health, the deployment of information systems within hospitals and health centers, and the creation of technical support units in the relevant institutions. |
| National Financial Inclusion Strategy (NFIS) 2015-2020 | The NFIS was adopted by the Central Bank of Burundi, focusing on plans for financial sector growth, including microfinance, but its proposed actions also involve other areas of the economy such as increasing access to finance in the agricultural sector. Through sub-objective 1.4 that aims to develop financial services through mobile phones and other technologies, the NFIS 2015-2020 broadly recognizes the role of digital financial solutions, |

**In sum, while reference to the importance of digital technology is made in Burundi's existing strategic frameworks, an actionable digital roadmap is still missing.** It is therefore urgent to update the PNDTIC 2010-2025, adding a clear roadmap for implementation of flagship initiatives across different sectors, with clear roles and responsibilities defined. Many key objectives identified remain far from being achieved, including universal access to broadband, which points to several underlying issues related to poor strategy design and weak political buy-in, but also lack the effective institutional coordination, and access to adequate resources to support implementation. Consequently, the absence of a clear strategy has had an adverse impact on the effectiveness of the existing institutions, and key MDAs lack strategic direction and shared vision.

### 2.2.2 Institutional framework

The institutional framework for the governance of the digital economy is defined by the PNDTIC 2010-2025, and places it within the realm of four key institutions; MoYPICT, SETIC, ARCT and the CNSI. However, the roles of these actors are not necessarily well-defined, and their leadership is not acknowledged by sectoral actors. Parties in charge of the centralization of efforts, such as SETIC and CNSI, lack resources to enforce their position.

#### 2.2.2.1 *Leadership*

**The MoYPICT is the line ministry in charge of providing the Government's leadership on the digital agenda.** Previously known as the Ministry of Telecommunication, the Ministry's revised mandate is the result a 2018 reshuffle where the organization and function of the Ministry changed. The line ministry is in principle responsible for the development of policy, strategy, law and regulatory pertaining to ICT, but has so far produced few key documents that have been formally adopted.

**The SETIC is the implementing arm of the line ministry on matters pertaining to ICT.** The entity was created through Presidential decree in 2007 and designated as a national authority, charged with the implementation of major ICT programs. Its mission includes operationalizing the Government's strategy in relation to e-governance, and promoting of ICT in relation to other areas of social and economic development, including science and culture.

**The ARCT is responsible for regulatory oversight of the ICT market in Burundi.** Its mission is to promote public access to quality electronic communication services throughout the territory of Burundi at affordable prices and contribute to the development of broadband services necessary for the emergence of the digital economy.

10 https://www.researchgate.net/publication/281970920_Plan_National_de_Developpement_de_l'Informatique_de_Sante_du_Burundi_PNDIS

**The CNSI is responsible for supporting the Government's coordination, implementation, as well as monitoring of the PNDTIC** and was created through a Presidential Decree issued in 2007. The CNSI could also play a role in ensuring fair treatment of information, and supporting the Government's programs on data governance and cybersecurity, which are currently missing. At present, the CNSI's role appears to be limited.

#### 2.2.2.2 *Other line ministries, departments and agencies (MDAs).*

**As it stands, the implementation of digital by other line ministries is either absent, or piloted using siloed approaches.** Some sectors, such as health, have an advanced and in-depth strategy with a clear roadmap, however, many key areas such as e-government, e-commerce, digital entrepreneurship and innovation lack vision and leadership. Overall, there appears to be limited interaction between the general leadership of MoYPICT, and sectoral line ministries where there could be greater synergy, such as in relation to the deployment of cross-cutting programs. Among the other MDAs, three appear to be in a position to share their experience and support further digital transformation: the Ministry of Public Health and Fight Against AIDS (MSPLS), the Central Bank of Burundi (BRB) and the Burundi's Institute of Statistics and Economic Research (ISTEEBU).

**The MSPLS initiated the PNDIS II in 2015, and it remains one of the most comprehensive efforts in the implementation of digital economy programming in Burundi.** Most medical, administrative and technical services of the MSPLS are equipped with computers and basic software. The modern systems put in place by DHIS2 and Open Clinic which connect all hospitals and health centers are one of the key aspects of the PNDIS, which other institutions can take inspiration from and share lessons learnt in rolling out the digital architecture.

**The BRB recently passed some key laws and regulations, further discussed in Section 6.2.2.1, to enable digital financial services through the provision of a payment service provider license for non-banks and regulation of the financial agents.** The BRB also helps carry out the Government's financial inclusion strategy through the facilitation of mobile money services, which it has been doing through the aforementioned regulation.

**ISTEEBU is Burundi's national statistical office, which launched the Integrated Multi-sectoral Information System (IMIS), a nascent open data initiative for economic and sociodemographic data.** It is a first-of-its-kind initiative in Burundi; while ISTEEBU does not mention open data as part of its mission, it has made efforts to make this service available to citizens. However, the use of the platform remains limited, due to both limited knowledge of its existence and the quality of the data available. Further efforts are needed to improve it, which will require stronger institutional and policy coordination from leadership.

**The present institutional framework in Burundi is marred by weak inter-agency coordination.** As it stands, digital transformation efforts are characterized by scattered initiatives across MDAs. Notably, efforts to support government digitalization have mirrored the vertical silos of government organization, resulting in pockets of progress but marked absence of a whole-of-government approach, leading to cost inefficiency and fragmentation. As noted in Section 5.2.2, the Government recently implemented the COMGOV network to enable interconnectivity across MDAs, but it is not effectively operational in most units. Donors have appeared to sometimes reinforce silos, as they typically channel funding to specific sectoral projects, as opposed to supporting cross-cutting interventions.

**The absence of clear mandates, but also adequate clout and resources, also appear to be sidelining lead institutions.** For example, while SETIC is charged with supervising all digital project in government in order to achieve greater synergies and resources efficiency, they are typically sidelined by line MDAs. It is also unclear what relations CNSI has to the SETIC, where the two agencies appear to have very similar and overlapping mandates. While it is encouraging that Government has recognized the need for overarching coordination, (resulting in the birth of both CNSI and SETIC), neither appear to be fulfilling their roles, as intended. Anecdotal evidence suggested the many MDAs prefer to manage

donor projects independently, both due to wider-spread financing gaps in government, but also in the hope of personal financial gain. Meanwhile, many of MDSs often lack the necessary skills to support the effective implementation of digital initiatives.

### 2.2.3 Legal and Regulatory framework

**Laws that regulate the ICT sector have not kept pace with technology evolutions.** There are no laws in place to protect personal data privacy. The MoYPICT has developed a law on electronic communications and transactions but it has not yet been promulgated as of January 2021. Broadly speaking, Burundi is still characterized by a legal and regulatory vacuum on many cross-cutting issues that pertain to the digital economy, which shapes the enabling environment for wider and safe digital adoption.

**Several regulations exist, including basic licensing to offer data services on digital markets, and PSP licenses that allow non-banks to offer DFS to the large unbanked population.** However, the absence of a comprehensive regulatory framework at the highest institutional level is a major cross-cutting constraint to the development of the digital economy in Burundi. This diagnostic briefly lists some of the key regulations currently in effect in Table 2.3 below. Other key regulations are lacking, including those on cybersecurity, data protection and access to information, which are essential to the design and implementation of a national strategy for the digital economy.

Table 2.3: Law, decrees or regulations in place for the digital economy

| Law, decree or regulation | Description |
|---|---|
| Décret N°100/186 du 16 octobre 2017 portant création et modalités de gestion du fonds de service universel des TIC au Burundi.[11] | This presidential decree institutes Burundi's Universal Service Fund (USF) and sets the modalities and priorities for USF projects. The USF in Burundi is managed by the MoYPICT and executed by the ARCT. However, proceedings since this decree was enacted are largely unknown. Stakeholders report that the taxes are being collected by ARCT, but there are no reports, nor any data, as to what the monies have been used for. |
| Règlement N°002/2017 relatif aux agents commerciaux en opérations de banque et de services de paiement[12] | This BRB regulation builds on Regulation N°001/2017 below by allowing commercial agents to work with the newly regulated PSPs as well as banks. Commercial agents are allowed to exercise payment and banking activities on behalf of PSPs and banks. They must be declared by the PSP or the bank and approved by the BRB. |
| Règlement N°001/2017 relatif aux services de paiement et aux activités des établissements de paiement[13] | This BRB regulation creates the status of payment service provider, which is a moral person authorized to provide services such as: cash transfers and withdrawal from a payment account, automatic transfers, pre-paid payment cards, as well as the use of electronic money. The regulation is comprehensive and allow PSPs to operate without having access to a bank account, which is critical in ensuring that DFS can reach the large unbanked population. |
| Décret n°100/97 du 18 Avril 2014 portant fixation des conditions d'exploitation du secteur des communications électroniques[14] | This presidential decree legalizes the merchant provision of data-driven value-added services such as e-commerce platforms, direct messaging platforms, call centers, virtual social networks, and mobile money platforms. Entities interested in entering the market must obtain the relevant license from ARCT. |

[11] http://www.arct.gov.bi/images/decretslois/decret100186.pdf

[12] https://brb.bi/sites/default/files/R%C3%A8glements%20adopt%C3%A9%20des%20Agents%20commerciaux.pdf

[13] https://brb.bi/sites/default/files/R%C3%A8glements%20Services%20paiement_adopt%C3%A9s.pdf

[14] http://www.arct.gov.bi/images/decretslois/decret1.pdf

| | |
|---|---|
| Décret n° 100/112 du 05 Avril 2012 portant réorganisation et fonctionnement de l'agence de régulation et de contrôle des télécommunication « ARCT »[15] | This presidential decree reorganizes ARCT to make it one of the key actors of the ICT sector in Burundi. It brings it under the authority of the Presidency of the Republic and redefines its missions, mainly a) to promote universal access to ICT, b) to contribute to the emergence of broadband services and the digital economy, and c) to optimize the planification and management of the telecommunications market. |
| Décret–Loi N° 1/011 du 4 Septembre 1997 portant dispositions organiques sur les télécommunications[16] | This decree-law is the organic disposition for the telecommunications market in Burundi. It liberalizes the telecom market, at this time mainly around radiocommunication and telephony, and created the ARCT. |

**As noted in Table 2.3, the legal and regulatory framework has progressed slowly and still lacks some key enablers.** Burundi is the only country in the East African Community (EAC) that does not have a specific law on access to information. There are also no specific laws on data archiving or data sharing, which severely complicates the development of new data-driven products and services. There are no specific laws or regulations to ensure interoperability between government systems, which reinforces the siloed architecture of MDAs.

## 2.3 Recommendations & Next Steps

While results are happening at a very localized level, Burundi's digital transformation strategies lack coherence. The strategies in place do not build on each other, institutions' roles are defined but not enforced in practice, and regulations are being rolled out at a pace too slow to benefit digital businesses and other content creators in Burundi's nascent digital ecosystem. This is largely due to the low resources available for central institutions like SETIC, and to the connectivity barriers across MDAs. Improving inter-ministerial coordination and enforcing a clear whole-of-government vision of digital transformation at the highest level of Government will be key to ensure that Burundi can make the most of its ongoing efforts of digital transformation.

Table 2.4: SWOT analysis on institutional framework

| Strengths | Weaknesses |
|---|---|
| • The **current strategies acknowledge the importance** of investing in digital technology<br>• Some **foundational regulations are operational**, especially to enable mobile payments<br>• **Institutions exist** for both cross-cutting leadership and sectoral expertise<br>• There have been **good results at the sectoral level**, especially in health | • There is **no overarching digital economy strategy** beyond the PNDTIC, which lacks an actionable operational plan.<br>• The current institutional framework has institutions in place which **lack resources and legitimacy** |
| **Opportunities** | **Threats** |
| • There are opportunities to **leverage lessons learnt from sectoral agencies**<br>• Also opportunities to **work with the EAC** and adapt legislation passed in other countries | • There are **important regulatory and legal gaps** on open data, personal data protection and cybersecurity.<br>• As discussed in the next chapters, **foundational pillars of the digital economy are** |

[15] http://www.arct.gov.bi/images/decretslois/decrete.pdf
[16] http://www.arct.gov.bi/images/decretslois/decret011.pdf

| | |
|---|---|
| • There is a **high demand** from private sector and citizens for more digital services, which indicates a good momentum for the sector | **nascent**, so it is urgent to build up leadership for each of these |

**The DE4A Country Diagnostic considers the recommendations below to support digital governance:**

## Objective 1: Integrate and operationalize existing strategies

**R1. Adopt a new overarching strategic vision for the digital economy.** As noted above, the country still lacks an actionable strategy to promote the digital economy. This process should convene all key stakeholders, allowing the ecosystem to rally around a common vision. An overarching strategic vision should clearly enact the high-level priorities and be flexible enough to allow for sectoral sub-strategies, which add detail without resulting in siloes. It should provide fora for exchange between institutional actors, and allocate resources to give key institutions the means to achieve their objective.

**R2. Ensure that the strategy is supported by SMART (specific, measurable, actionable, relevant and time-bound) action plans.** This will help support more effective implementation than we have witnessed to-date. Monitoring the strategy needs take place alongside capacity building for data collection and analysis, in order to keep track of key performance indicators. The monitoring approach should help to identify institutions in charge and hold them accountable. Indicators part of the monitoring should be published on open data sources such as ISTEEBU's IMIS platform.

## Objective 2: Strengthen institutional coordination as a whole-of-government

**R3. Clarify institutional mandates.** As it stands, Burundi appears to be employing an opaque institutional approach. As noted in Section 2.1, government usually resort to one of two institutional approaches: a supra-ministerial secretariat of ICT, or a line ministry in charge of the digital economy. In Burundi, the ARCT is a supra-ministerial entity, while the SETIC is under the MoYPICT, which is the line ministry. There is a need to disentangle this institutional landscape and clearly attribute the roles and means to work for each of these institutions. Provided that Burundi plans to roll out a whole-of-government approach, the supra-ministerial approach would be preferred, and giving this role to SETIC rather than ARCT (which is clearly a regulator, but not a coordinator), seems the more appropriate option.

**R4. Support greater inter-ministerial coordination.** Through such supra-ministerial committee, it would be easier to support greater communication and collaboration between MDAs. This can take place through regular meetings, as well as the establishment of a clear communication infrastructure, for example through the COMGOV network (see Section 5.2.2). However, technical solutions, capacity building and better equipment needs to be provided to Government officials and public servants in order to help everyone connect to and use an integrated network.

**R5. Support a platform for ecosystem and donor coordination.** This recommendation aims to identify a platform for the public sector to systematically engage with its counterparts in the private sector, civil society, academia and international development partners on key issues. It could take the form of an online platform to collect feedback and interact with partners on key aspects of the digital transformation.

## Objective 3: Provide foundational laws and regulations for the digital economy

**R6. Adopt a suite of foundation cyber laws, aligned with global best practice and regional frameworks.** Aligning regulatory and legal provision will enable regional frameworks, including those adopted by the EAC, AU and the European Union (EU). Burundi can support movement toward the regional integration of digital markets, for example by allowing cross-border data sharing. Regional integration is explored further in In-Focus Section 3, and in boxes 2, 5, 8 and 12 across the report.

**R7. Strengthen the capacity of the Regulator and MoYPICT.** There is a need to scale up the pace of adoption of key regulations and laws for the digital economy. This is likely to require further capacity building and technical assistance, in particular with respect to data-driven services such as big data, artificial intelligence (AI) and related matters of data governance and cybersecurity.

# 3 Digital Infrastructure

Key messages:

- **On the supply side, Burundi benefits from its fiber optic backbone which has lowered prices and enabled growth in the telecommunications sector.** However, the market remains small and 99 percent is mobile-accessed, with 66 percent of connections at 2G speed, especially in rural areas.
- **On the demand side, several barriers hamper uptake, including the small market size due to low penetration of mobile devices, low skills base and a low perceived value of digital technology.** The price of 1 GB as a share of GNI per capita is 13.6 percent, constituting a major budget constraint and obstacle to technology adoption.
- **The market faces central competition and inequality risks.** High entry costs, growing market concentration and vertical integration as well as existing voice and data gateways constitute real challenges for the regulator. Improving universal coverage will require a coordinated effort to ensure that none are left behind.

## 3.1 Importance of Digital Infrastructure

### 3.1.1 Socioeconomic rationale for digital infrastructure development

**The first step to unlocking digital transformation and the associated digital dividends, is to ensure universal, affordable and safe access to internet through greater connectivity.** World Bank research has demonstrated that increased broadband penetration is associated with high impact on economic growth, especially in low- and middle-income countries. [17] Increased productivity of the private sector would in-turn help lift the Burundian economy. The Government would also receive a significant boost if public systems and delivery platforms were digitally robust and brought online, enabling greater e-service delivery. Similarly, with the means to connect, citizens would be able to access these services, especially in rural areas, as well as participate better in the political life of the country.

Table 3.1: Key indicators of digital infrastructure

| Indicator | Burundi | SSA |
|---|---|---|
| ***Penetration:*** | | |
| Internet Usage, % (2017) | 2.7 | 24.1 |
| Unique Mobile Cell. Subscription, % (2020) | 36.8 | 48.2 |
| Unique Mobile BB Subscriptions, % (2020) | 13.2 | 26.7 |
| Fixed BB Subscription, % (2019) | 0.04 | 1.6 |
| ***Affordability:*** | | |
| Price of mobile broadband 1GB, % of GNIPC (2019) | 13.6 | 7.8 |
| ***Coverage:*** | | |
| 2G Population Coverage, % (2019) | 50 | 87.3 |
| 3G Population Coverage, % (2019) | 40 | 70 |
| 4G Population Coverage, % (2019) | 25 | 34 |

Source: ITU, GSMA, A4AI

### 3.1.2 Alignment with country strategy

**Increasing adoption and utilization of internet services among the population remains critical to building a dynamic digital economy in Burundi.** While this is a priority embraced by the PNDTIC and Vision 2025 strategies, limited progress

[17] Kim, Y.; Kelly, T.; Raja, S. (2010). *Building broadband: strategies and policies for the developing world.*

has been made to date. As noted in the preceding chapter, Burundi lacks an actionable roadmap to implement digital development efforts in an integrated manner across sectors and pillars of the digital economy. The country remains largely behind the continental average on all of the key indicators of digital infrastructure, as demonstrated in Table 3.1.

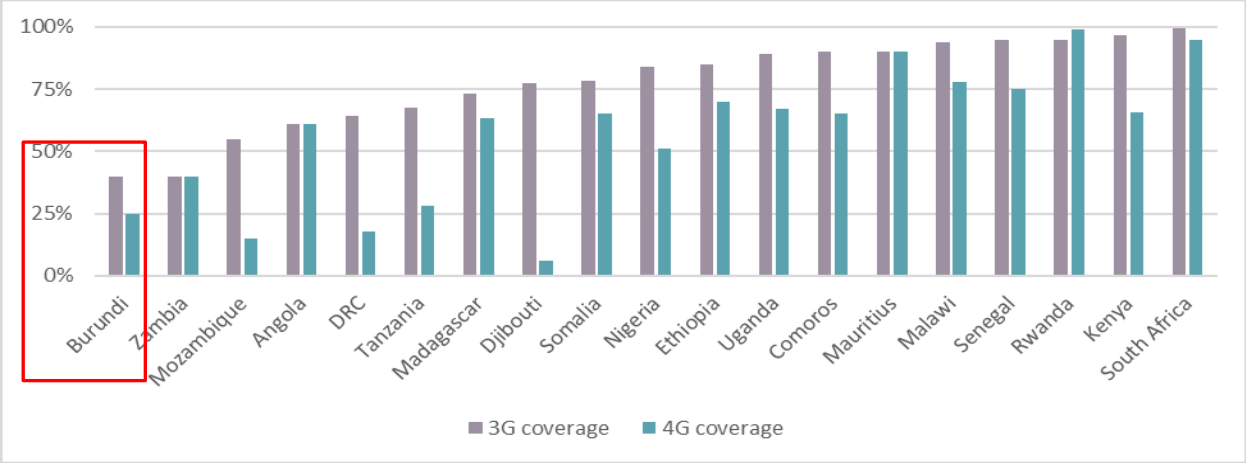
## 3.2 Diagnostic Findings: Current State of Digital Infrastructure

### 3.2.1 Availability, access and affordability of broadband internet

#### 3.2.1.1 *Availability*

**Mobile broadband network coverage, while improving, is still far from supporting universal coverage.** According to GSMA, 3G and 4G network covers only 40 and 25 percent of the population respectively. This places Burundi at the bottom of SSA rankings (Figure 3.2). Burundi also performs lower than East African peers such as Rwanda and Tanzania, where 3G coverage stands at 95 and 67 percent, respectively.

Figure 3.1: Population coverage of 3G and 4G networks in Sub-Saharan Africa




Source: GSMA Intelligence

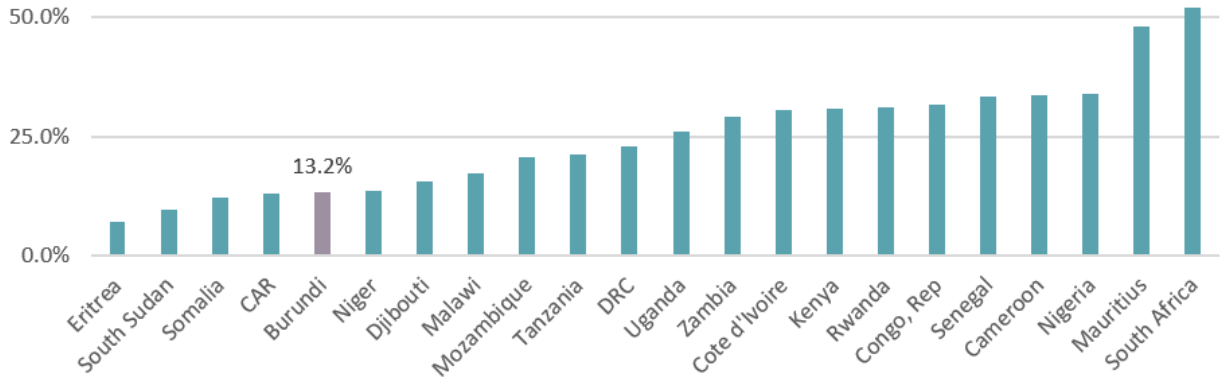
**Several factors hamper operators' ability and willingness to invest in network upgrades and expansion**, including an unpredictable regulatory and adverse business environment, meager profit margins driven by both high infrastructure deployment and maintenance costs, and weak consumer demand especially in rural areas. Burundi's inherent small market size and user base also limit operators' ability to leverage economies of scale. These issues are discussed further in the sections below.

#### 3.2.1.2 *Access*

**According to the ITU, the official internet penetration rate, based on mobile and fixed subscriptions was just 2.7 percent of individuals.**[18] Only 0.3 percent of households had wired internet at home, and 1 percent had a computer at home in 2017**.** As in similar markets, connectivity is predominately based on mobile broadband; in Q4 2019, 99.6 percent of all internet subscriptions were mobile.[19] The rate of unique cellular subscriptions stands at 36.8 percent,[20] and the level of unique mobile broadband subscriptions barely crosses the 10 percent threshold, according to the latest figures from ARCT and GSMA.[21] Burundi thus ranks below many of its peers in SSA, as depicted in Figure 3.1 below.

[18] ITU ICT Indicators database – Core Household Indicators.
[19] ARCT (2020). *Observatoire du Marché des Services Internet, 4ème trimestre 2019.*
[20] GSMA Intelligence.
[21] The latest figures from GSMA are noticeably higher than those provided by the ARCT or the ITU. This may be due the time difference between sources or to different methodologies. In any case, it is safe to assume that internet penetration is on a growing trend in Burundi, as in similar markets.

Figure 3.2: Mobile Broadband Unique Penetration in Sub-Saharan Africa, Q1 2020




Source: GSMA Intelligence

**A majority of Burundi mobile subscribers rely predominately on 2G services, with limited applications beyond voice-, SMS-based and mobile money services.** Out of 7,119,016 total mobile subscriptions in Q1 2020, the proportion of 2G, 3G and 4G was respectively 66 percent, 31 percent and 3 percent. Each of the four mobile network operators (MNO) indicated that a majority of their subscribers were still on 2G networks: 63.6 percent for Smart, 65.8 percent for both Econet and Lumitel, and 100 percent for Onatel.[22] The GSMA's mobile connectivity index suggests that key reasons for Burundi's limited usage of mobile internet include cost, consumer awareness and literacy (readiness), and limited infrastructure.

**While broadband penetration rates are modest, uptake does appear to be growing.** According to the ARCT, mobile broadband penetration rates recorded in Q4 2019 grew 35 percent on the previous year. Lumitel indicated a 30 percent increase in 3G subscribers over the same period, whereas Smart reported that 3G subscriptions had increased from 50,000 to 125,000 over a two-year period and that data consumption had doubled. Burundi thus appears to be on track to reach the interim goal of doubling broadband by 2021. However, starting from a low baseline, the country remains far from the more ambitious objective of reaching universal internet access by 2030, and risks falling behind. Operators note that growing demand for 3G and 4G services is largely fueled by the urban user base and remains weak in rural areas, creating limited incentives for further infrastructure roll-out, as discussed in Section 3.2.3.

#### 3.2.1.3 *Affordability*

**Uptake of broadband is also constrained by affordability, where Burundi performs poorly in relation to global affordability targets.** While absolute prices are lower than many other African countries, Burundi is far from meeting the UN's Broadband Commission's affordability target at 1GB for less than 2 percent of Gross National Income (GNI) per capita. The price of 1GB of data as percentage of GNI per capita is estimated to be 13.6 percent in Burundi, compared to 3.1 percent in Kenya and 3.4 percent in Rwanda (Figure 3.3).[23] Prices of mobile broadband have come down significantly following the roll-out of a national backbone that reduced reliance on expensive satellite services. However, operators reported that wholesale prices remain higher than in neighboring countries such as Rwanda and Uganda, which is discussed in Section 3.2.3.1 on first-mile connectivity.

[22] GSMA Intelligence data, Q1 2020
[23] Alliance for Affordable Internet, Mobile Broadband Pricing, Q2 2019.

Figure 3.3: Cost of mobile broadband as a percentage of GNI per capita


Source: Alliance for Affordable Internet (A4AI), Q2 2019

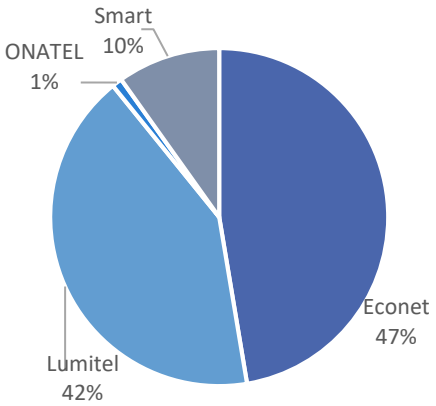
**Driven largely by cost, Burundi's penetration rate of basic phones, smartphones and internet-enabled devices is low.** Affordability of devices remains a concern and creates a significant barrier to mobile ownership and mobile internet adoption.

### 3.2.2 Analysis of Market Structure & Competition

**Competitive broadband markets lead to more affordable internet access and encourage innovation.** As of September 2019, there were four MNOs[24] and eight fixed internet services providers[25] (ISP) in Burundi. The newest market entrant Lumitel quickly emerged as an important player in many market segments in Burundi making significant investments, including its own middle-mile backbone and mobile access networks, providing it with a strong, vertically integrated position in the telecommunications market. However, Econet remains leader in the mobile market with a 47.4 percent market share. Lumitel comes in close second with a 41.8 percent market share, and outperforms Econet in the 4G market segment. The remainder of the market is captured by Smart and the public telecommunications operator (PTO) Onatel, with 9.9 and 1 percent of market shares, respectively (Figure 3.4).[26] The fixed line market remains small and dominated by CBINET, whose share is around 66 percent of the market according to the regulator.

**Gateways and exclusive licenses have exacerbated vertical market integration in certain market segments.** Examples include the Burundi Backbone System (BBS), which was established as an open access wholesale operator, but has slowly begun entering the retail market (see Box 1). Moreover, two gateways have been introduced under exclusive licensing provisions – one for voice and one recently for data. A voice gateway license was issued to International Telecom Services (ITS) under an opaque licensing process. Government recently also decided to introduce a gateway for data, which is set to be managed by BBS, reinforcing the role of this operator (see Box 4). There exists a sentiment amongst private operators, that the introduction of these gateways, undermines future investment in the market, negatively impacting new entrants in particular.

Figure 3.4: Market share of total mobile connections




Source: ARCT

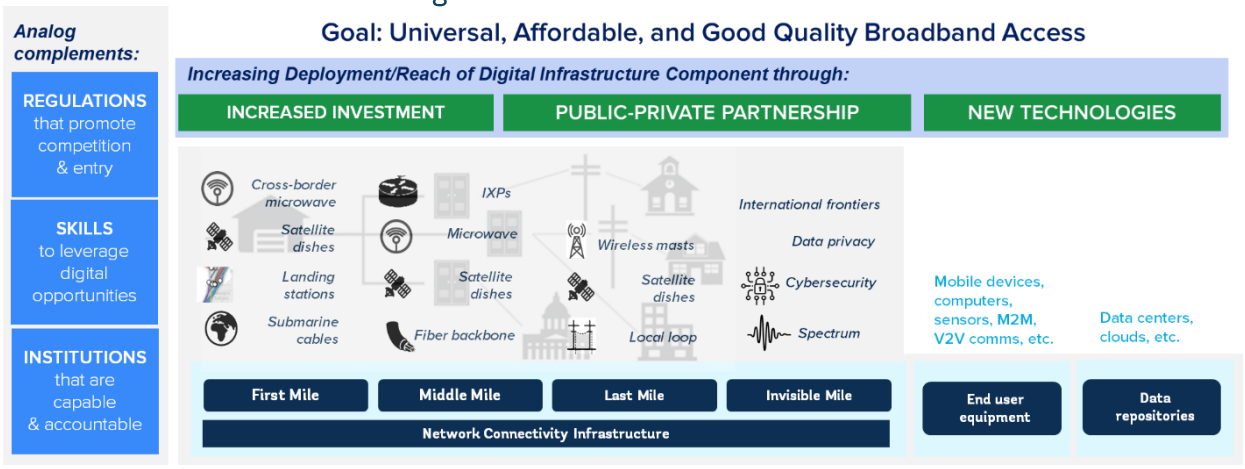
[24] The four MNOs are Econet, Smart, Lumitel and Onatel.
[25] The eight fixed ISPs are CBINET, Spidernet, USAN, LAMI Wireless, NT Global, BBS, Onatel and Lumitel. CBINet holds two-third of the market shares of the fixed line internet market.
[26] GSMA Intelligence data, Q1 2020

### 3.2.3 Broadband value chain

**For developing high-speed internet, the value chain needs to be incrementally built and requires four steps that can be undertaken in parallel tracks (Figure 3.5).** This framework was developed in the World Bank's World Development Report 2016 Digital Dividends, based on the four "miles" of internet development:

- **First Mile: how internet enters the country.** Understanding how Burundi is connected to international and regional networks.
- **Middle Mile: how internet passes through the country.** Looking at the national backbone, related regulation and business practices, as well as Internet Exchange Points (IXPs), datacenters/hosting arrangements, etc.
- **Last Mile: how internet arrives at a population center and reaches end-users.** Examining local access and mobile networks (2G, 3G, and 4G), as well as telecom market dynamics, structure, regulation and business practices.
- **Invisible Mile: how hidden elements are vital to ensure the integrity of the value chain.** This includes cybersecurity and components such as the radio spectrum and network databases. This also includes the policy and regulatory aspects governing the market, including those related to competition, cybersecurity, spectrum allocation and data protection.

Figure 3.5: Broadband value chain




Source: World Bank DE4A

#### 3.2.3.1 *First Mile: International Connectivity*

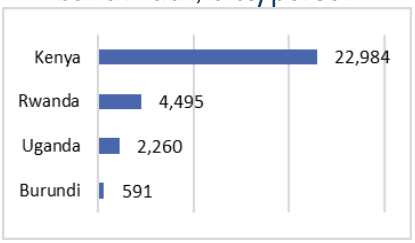
**The migration of backbone connectivity from satellite-based to fiber-based links over the last few years have helped to unlock far greater bandwidth than previously available in Burundi.** Burundi is currently connected to a single submarine cable, the East African Submarine Cable System (EASSy), through six cross-border connections with Rwanda and Tanzania. In December 2019, BBS entered in a 10-year agreement with Tanzanian firm TTCL to further build connectivity and gain access to the Seacom cable.[27] It is important to note the landlocked reality of Burundi, which increases reliance on its neighbors and can increase the price of international connectivity.

**Five ISPs are transporting internet capacity from neighboring countries, but the percentage of capacity used is still a fraction of the total available.** As of Q4 2019, Burundi used a capacity of ~2.3 Gb, representing 32 percent of the total 7.1 Gb bought by the ISPs. The bandwidth usage per capita (at 591 bps) is one of the lowest in the world (Figure 3.6). The excess capacity reflects the constrained downstream infrastructure, as well as acutely low data demand (driven by low smartphone penetration and lack of affordability). Factors that contain demand are discussed further in Section 3.2.4.

[27] https://www.theeastafrican.co.ke/business/TTCL-to-expand-fibre-optic-cable-to-Burundi/2560-5328308-90l2b4z/index.html. Accessed on May 31st, 2020.

**In addition to capital and operational costs of expenditure, high taxes affect wholesale prices which get passed along to consumers, resulting in increased retail pricing.** ISPs and MNOs can access international connectivity on a wholesale basis from BBS (except Lumitel, which operates its own fiber), despite gateway issues mentioned above.

Figure 3.6: International bandwidth, bits/person




Source: National regulatory agencies

#### 3.2.3.2 *Middle Mile: Backbone Networks*

**Rapid increases in wholesale facilitated by the WB-supported National Backbone Network and the construction of Lumitel's network have brought growth to middle-mile connectivity in Burundi.** The segment is contested by three players: Onatel (the national PTO), the mobile operator Lumitel and the wholesale provider BBS. While the government expanded the scope of licenses for mobile operators such as Lumitel to deploy their own infrastructure, pure-play ISPs are not allowed this flexibility and scope.

**Despite having low network coverage, Burundi has one of the highest fiber densities in the region.** The national backbone managed by BBS consists of 26 regional nodes, connecting 17 administrative provinces and a 40Gbps capacity transport platform (upgradeable to 100Gbps) for connectivity to international submarine cables. Lumitel has also deployed 3,300km of fiber, covering all 18 provinces. In Bujumbura, the PTO Onatel has built out a 200-km metropolitan area network (MAN), while BBS's metro network is 75 kilometers long. Other major municipalities are yet to benefit from the deployment of MANs in substantial terms. BBS is implementing a strategy to diversify its revenue from sale of wholesale bandwidth to value-added services such as voice over IP (VOIP), video protection and data transmission (now accounting for 60 percent of its revenue). Moreover, BBS recently installed Dense Wavelength Division Multiplexing (DWDM) technology, which helped increase the its internet capacity to 4 terabytes of IP transmission. The main customers of BBS are the operators, ISPs, large businesses and the government, which buys 100MB for 40 institutions, including 20MB for 10 universities.

### Box 1: Burundi Backbone System

**BBS was launched in March 2013 as a consortium of Burundian telecom operators who joined forces to build a national fiber optic network, with support from the World Bank.** BBS offers IP transit to ISPs, application service providers, content readers and other users requiring high-quality performance. Many ISPs have expressed concerns that the recent entrance of BBS into the retail market poses a threat to their business model. This vertical integration of BBS happened under the aegis of the ICT ministry; reasons cited include the need for additional revenue generation and greater acceleration of internet service deployment.

**After its entry into the retail segment, data and transmissions now account for 40 percent of BBS' revenue stream.** BBS has one level-3 data center built at a cost of USD2 million. Its business strategy is to use the data center to offer value-added products such as hosting – a service aimed at localizing web pages and databases. BBS also operates the Burundi Internet Exchange Point (IXP) to which many operators already connect but do not pay. The IXP already ensures 60% of local internet traffic and provides caching services to companies such as Google, Facebook and Akamai.

**According to BBS, the principal challenge in growing the last mile to households and businesses is the cost of civil works.** BBS systems are prone to vandalism, cuts and theft. Installation comes at a high cost – USD 2,000 per kilometer. In addition, BBS is not often consulted when public works are being carried, implying that its installations often get tampered with.

**The Burundi Internet Exchange Point (IXP) was created in May 2014 to eradicate the problem of local traffic being channeled through international connections.** This opened new prospects for growth and development, increased internet traffic and improvement of the revenue streams of all companies concerned. The IXP is managed by BBS and supervised by the regulator ARCT, which is responsible for guaranteeing fair competition in the telecommunications sector by ensuring that all players provide access on a transparent and nondiscriminatory basis and adhere to requests for interconnection.

**Exploitation of new additions to the middle-mile segment through massive roll-out of FTTP and other services remains a key challenge.** In addition, for both existing and future operators that do not have their own network, the appropriate regulatory tools to ensure effective, nondiscriminatory and fair access to Burundi's national backbone infrastructure need to be in place.

**While the notion of a digital economy is still a novel idea in Burundi, wholesale demand for internet bandwidth has grown to 7 GB out of the available 13.7 GB of combined capacity.** First-generation ICT reforms and investments involving market competition and privatization have led to greater access and affordability of mobile internet but have been less successful in spreading digital adoption beyond the most affluent segments of the population. Much of the reason lies in ongoing issues of regulatory capture, low purchasing power, high taxation, and lack of competition in the international gateway for voice and data markets.

### Box 2: Regional initiatives in the connectivity sector

Given its geographical positioning, the development of digital infrastructure could allow Burundi to act as a hub for trade between Central Africa and East Africa, and between Central and Southern Africa.

As one of the five member nations in the East African Community (EAC), Burundi joined in 2014 the initiative to cap minimum roaming charges to boost integration with member states Kenya, Rwanda, Uganda and Tanzania. Under the East African Community Interconnections Regulations, EAC countries seek to implement a regional policy to guide service providers and regulators in developing tariffs for digital connectivity across borders, which may provide opportunities to further develop its infrastructure.

In 2017, Burundi and DRC signed the Boundary Frequency Coordination Agreement to "combat the illegal commercialization of telecommunication products".

#### 3.2.3.3 *Last Mile: Internet Services*

**With only 2 percent of rural Burundians having access to electricity, mobile operators have to deploy their own energy infrastructure to more rural and remote areas, adding to operating expenses.** Burundi's rate of mobile penetration currently sits at 36.8 percent, and while it has increased over the years, much remains to be done to bring the rate on par with the regional average. There are four companies licensed by the ARCT to offer mobile cellular services. The latest entrant, Viettel Burundi, was awarded a mobile operating license in February 2014, launching in May 2015 under the Lumitel Brand. The government reportedly charged Lumitel BIF 16 billion (more than USD 10 million) for the license, well below the original asking price of BIF 60 billion (around USD 37 million). The growing mobile penetration led to mobile money being the second most developed use of telephony, behind mobile internet, a topic further discussed in Chapter 6.

Figure 3.7: Burundi's backbone network


Source: Burundi Backbone System

**Given that most Burundians access internet via mobile, the low share of mobile users who have internet connectivity is a key constraint.** Fixed broadband infrastructure and coverage, while growing, are still limited, and when coupled with their relatively high costs, the clearest path for getting more Burundians online appears to rely yet on mobile. Enforcing obligations for mobile internet coverage and the development of other models to promote affordability for both urban and rural dwellers hold valuable promise.

**Burundi has a noticeably low penetration of fixed internet at less than 1 percent compared to 1.6 percent in the region.** Only 0.04 percent of internet subscribers have fixed broadband access at home. This low rate reflects the low density of relatively costly fixed access networks and the fact that users have found a competitive alternative in the mobile internet packages that are now becoming more ubiquitous than 5 years ago. Given the small size of the market, licensing new market entrants such as Groupe Vivendi Africa (which is now actively deploying FTTP in many francophone countries) may be ambitious.

**The biggest push in terms of investment in mobile network expansion has come from the newest mobile operator**. Lumitel has rolled out a total of 1,000 base transceiver stations (BTS). In 2019, Lumitel registered 53 percent and 38 percent annual growth for 3G and 4G connections, respectively. In the same period, Econet registered 37 and 39 percent growth, respectively for 3G and 4G, while Smart registered 44 percent growth in 3G connections.

**Both mobile network coverage and mobile broadband uptake continued to be characterized by a stark urban-rural divide**. Smart only provides network coverage in Bujumbura and major towns, and some 75 percent of the operator's subscribers are estimated to be in Bujumbura. Consultations with MNOs suggest that demand for 3G and 4G in rural areas is weak. Moreover, Burundi's hilly terrain makes it very difficult to build infrastructure, in addition to already high capital and operational costs of expenditures that significantly deter incentives to invest.

### Box 3: Universal Service Fund

**A USF was formally established in 2017 and is intended to finance exclusively activities related to enabling universal access to ICT services, including the development of the ICT sector and training.** Its main goals were the provision of public access points for electronic communications services throughout the territory; the connection of any person to public networks and access to basic electronic communications services; access to emergency services and free information; free delivery of emergency electronic communications; implementation of special measures for certain social groups; service of uncovered rural areas; development of the disadvantaged sectors of the national economy through the use of electronic communications; support for research, training and standardization. The USF is entirely funded nationally through a 1 percent tax on the turnover of telecom operators, and government grants through the Ministry of ICT.

**Consultation with USF management suggest that the USF is focused on expanding community telecentres, which once established are run by community non-profits on a voluntary basis.** Four centers already exist and another ten are being added in 2020. While authorities claim that these centers are well-used, the global evidence-base questions the efficacy of the telecentre model.

**To date, the USF scheme has far from achieved its goals.** Industry interviews indicate that there is significant room for improving operations of the fund.

#### 3.2.3.4 *Invisible Mile: Legal, Policy and Regulatory Environment*

**In Burundi, any natural or legal entity, national or foreign, can participate in the ICT market, by filing a license application and concluding a concession agreement with the Government.** All license applications are filed with the industry regulator ARCT, which advises the Office of the President and the Government to issue licenses. A concession agreement would then have to be signed between the ARTC and the service provider.

**The Ministry of Posts, Information Technology, Communication and Media has overall authority for the sector and carries out its directives through ARCT.** A draft law governing electronic communications and providing a new telecoms regulatory framework, is still in draft and is yet to be promulgated. The lack of new regulatory framework for the industry is causing regulatory uncertainty for operators and ISPs, delays potential revenues for the public treasury and limits the potential of the overall digital economy in Burundi.

**Taxation is another big issue in Burundi, one of few countries where the government levies a special voice tax.** The telecom sector is not only subjected to VAT, but also to a special 52 BIF tax charge on voice and an 18 percent VAT on data – effectively a double taxation system in Burundi's telecom sector. In addition, the sector suffers a double impact of VAT – input VAT and output VAT. The input VAT is meant to be netted off against the output VAT but because the government taxation system is not robust enough, operators find it difficult to get reimbursed the input VAT. ISPs pay USD10K levy regardless of turnover in addition to a 4 percent tax on turnover and a 1 percent charge on turnover for USF contribution. Taxations of incoming and outgoing international calls has had a detrimental impact on this revenue stream for both operators and government, leading international voice traffic to virtually disappear.

**There is a general drift towards less competition in the Burundian ICT market.** Large scale controls with opaque governance and no arbitration process have been rolled out since June 2019. Yet markets with healthy and competitive broadband actors also lead to better outcomes on data protection and cybersecurity, an issue which needs to be seized by the regulator ARCT or the Ministry of ICT. Despite price promotions, the market position of smaller mobile operators and of the five internet service providers are subsequently being weakened, and operators' margins are thinning and prices (in relative terms) remain stubbornly high (for most of the population).

**Both the growing inclination towards high taxes and market concentration are epitomized by the introduction of two gateways –** both of which have been introduced to secure tax revenue and under exclusive licensing provisions (see Box 4).

**Support for regional integration of infrastructure markets could help infuse more competition in the Burundi, in favor of lower rates and better quality.** The benefits of related regional integration in East Africa has been aptly demonstrated by the One Network Area (ONA), which

### Box 4: International Gateways

**A series of gateways have been introduced in Burundi**, which have proved unconducive to supporting telecoms and broadband market development.

#### Gateway on international voice and text

The introduction of a unique common gateway, administered by International Telecom Services (ITS), has created a de facto monopoly in the international voice and text traffic market segment. Since 2015, all operators are required to transit their international traffic through ITS. A flat tax of USD 0.16 is subsequently imposed on each minute of voice traffic. The process under which this license was awarded has not been publicly disclosed and, unlike all other operators, ITS is exempt from paying fees or taxes to the Government of Burundi.

#### Gateway on international data

In 2019, government decided to introduce a second gateway for internet and data traffic. The decision became effective in May 2019. The new gateway will be run by BBS. Although pitched under the guise of security, this gateway has hiked up prices for operators, lowered the quality of internet available to service providers, and compromised recent private investments made in the sector. In addition, BBS recently entered the retail market, which reinforces its monopoly power (as further detailed in Box 1).

**The use of gateways is generally viewed as running counter to global best practice**. Typically, they can be counter-productive, and are known to create practices of undercutting, bypassing, or refiling, which ultimately impact fiscal revenue and ability to regulate the sector.

Burundi is yet to joint (see Box 5). The wider benefits of an East Africa Single Digital Market (SDM) is discussed at the end of the report.

### Box 5: One Network Area

**In 2014, the countries of the East African Community (EAC) made a joint commitment to create the One Network Area (ONA**). The ONA currently covers Kenya, Rwanda, Uganda and South Sudan, with the possibility for Burundi and Tanzania to join the network. The agreement introduced harmonized rate caps for cross-border traffic originating and terminating within participating ONA countries, and eliminates roaming surcharges for users traveling within the region. The ONA applies to both voice and data traffic, with significant impact as cross-border traffic is growing rapidly in the region. Regionally, the effect of ONA has been marked: cross border traffic tripled between Uganda and Kenya in the wake of ONA's introduction, this is an illustrative example of potential impact that an initiative like this could have on Burundi.

**For Burundi, joining the ONA would be a positive step forward in achieving both better rates and higher quality for internet users**, and also in terms of updating internet sector regulation to regional best practices, and fostering cross-border data exchanges with EAC countries. Experience suggests that interventions that help lower connectivity prices for consumers stimulate uptake of digital technology, thus making it a high priority in the context of Burundi and the AU's objective to reach universal access within 2025.

*Source:* Kelly, T., and C. Kemei. 2016. *WDR 2016: Digital Dividends; A Case Study of ONA.* ITU.

### 3.2.4 Demand-side constraints

**The low demand for connectivity is now one of the main constraints to the digital economy in Burundi.** As discussed in the previous sections, while internet is increasingly available through mobile networks, constraints that impact accessibility and affordability are still very present in the population, due to the lack of skills and digital culture, low perceived value of adopting new technology, and the low purchasing power that result in only 13.2 percent penetration of mobile broadband connections. This is further constrained by structural difficulties such as lack of electricity. Access to handsets remains low; for a majority of consumers, this is due to affordability constraints.

**The low purchasing power is one of the most constraining factors to broadband penetration, despite a relatively favorable cost of access at USD 3.17 per GB.** Operators have employed several tactics to ensure Burundians access to the internet at more affordable rates, but progress has been slow. Onatel, the national PTO, launched the ADSL2+ project in 2016, targeting small and medium enterprises (SME), public sector administration, schools, hospitals, libraries, the media and Burundian households to offer internet at reduced rates. Other operators have invested in flexible price bundling promotions (e.g. Econet's 1.5GB for 55 US cents) in order to entice data consumers. Mobile operators provide flexible options to customers with prices starting at 11 US cents for a one-day pass of 40MB, rising to USD 3 and USD 38 for 30-day-validy data packs at 1 GB at 25 GB caps, respectively.

**In addition, there is little perceived value of the benefits of digital technologies.** As discussed in Chapter 4, awareness and skill training could help Burundians in lifting bottlenecks that prevent a more general utilization of digital technology. The lack of digital content offered to Burundians is also symptomatic of the difficulty to launch digital initiatives in the country. Section 5.2.5 on e-commerce platforms also points out that most initiatives disappear after a few years due to the lack of uptake from the general public.

**Parts of the Burundian economy are not yet ready for digital transformation, as some key foundational elements are insufficiently robust to support the change.** Most notably, this includes the existing

infrastructure and electrical networks, as well as extreme poverty and urgent health needs that relegate the internet adoption and use to a secondary priority.

## 3.3 Recommendations & Next Steps

**There is a need and an urgency to deepen broadband penetration to low-income and rural potential customers.** The USF will be a key instrument in achieving this goal, and can support adoption through awareness raising, training and provision of local access points. Ignoring these necessary reforms means falling farther behind; investing in both the infrastructure and its essential complements is key to the success of the digital transformation.

Table 3.2: SWOT analysis on digital infrastructure

| Strengths | Weaknesses |
|---|---|
| • Important progress made in rolling out the **national fiber backbone network**, especially **first- and middle-mile infrastructure**<br>• **Demand is growing in urban areas**<br>• Internet **prices are low in absolute terms**, but **very high as a share of GNI per capita**<br>• **New regulations in the telecom sector** lay the foundations for interconnection and interoperability, but more are needed, and implementation capacity is lacking | • **Demand is now the most important barrier** to further technology adoption<br>• Burundi is characterized by a **small market** with **low purchasing power**, **low skills base** and a **low perceived value** of ICT<br>• **Low penetration rates** of internet services and mobile devices<br>• **Low quality of connectivity and speed**, with two-thirds of the connections being 2G<br>• **High competition risks**, due to existing gateways, market concentration, taxation, high entry costs and inexistent USF facility |
| **Opportunities** | **Threats** |
| • **Good momentum in the market with recent private sector investments, new regulations and opportunities in the last and middle mile segments**<br>• **Recent agreements to build additional fiber infrastructure with Rwanda and Tanzania**<br>• **The USF could be expanded beyond its current use for rural connectivity and bringing marginalized groups online**<br>• **Opportunity to leverage the cybersecurity industry and data privacy as a driver of economic growth** | • **Achieving universal access, including in rural areas, will require a significant and coordinated effort**<br>• **Risk of deepening the digital divide**, as 87 percent of the population live in rural area, and digital adoption is slow.<br>• These factors make it **difficult to reach a critical scale in the telecom market**<br>• Burundi's landlocked reality constitutes a reliance on its neighbors, notably Tanzania where TTCL has a stranglehold over transit. |

**The following recommendations could support the development of digital infrastructure in Burundi:**

### Objective 1: Improve access to existing infrastructure and invest in new broadband networks

**R1. Liberalize access to the gateway, curb the emerging monopoly of BBS and lift restrictions on internet service providers (ISPs).** While the second national operator, Lumitel, has its own international gateway, a new directive will now mandate payment to and dependence on BBS. And despite the large

number of ISPs licensed, many face restrictions. Restrictions on entry into the fixed-line and international gateway markets have meant that ISPs must lease infrastructure from BBS and Lumitel. BBS, until recently, has had a stranglehold on landing stations, although two mobile operators and one ISP (CBINet) belong to the consortium that owns the BBS network. The licensing process around both the voice and data gateways needs to be more transparent.

**R2. Focus on extending connectivity to key white spaces in the middle-mile segment.** The USF, which should be used to ensure that internet access and use is a reality for all, remains, for the most part, an untapped resource. This issue is compounded by the fact that information — let alone up-to-date data — on the use and effectiveness of the USF is kept behind closed doors or is missing entirely. Funds are collected but not spent on connectivity projects, and when spent, not in a timely manner. Therefore, it is urgent to:

- Increase transparency of USF financing and operations. Ensure that USF keeps track of data on fund contributions, disbursements, and project design and selection available to the public in an open data format, and that this data is disaggregated by gender and other factors (e.g., age, location, income), where possible.
- Amplify the power of USF funds with programs that specifically target barriers to connectivity. These might include public access spaces designed for youth, public Wi-Fi spots or zones, subsidized devices for households, and digital skills training in schools.
- Re-enact laws or other rules governing the USF which require all monies in the fund to be spent by the end of each fiscal year. This will help to promote timely disbursements
- Roll out shared infrastructure in rural areas. The difficult geography of Burundi and lack of electricity and access roads are hindering the deployment of connectivity infrastructure in rural areas. Newer, lower-cost connectivity technology and business models, and more rigorous enforcement of license obligations can help.
- Facilitate the entry of independent wholesale broadband operators

**R3. Facilitate deployment of infrastructure through ramp-up of high-capacity FTTP and build-out of associated infrastructure.** The main challenge on the supply side is insufficient access points such as hotspots, despite high fiber density. Renewed effort is needed to:

- Encourage open access to the Onatel's network and require all major infrastructure programs (such as roads, railways, pipelines, and energy distribution) to include provision for a fiber link.
- Fiberize towers and deploy more higher-capacity data centers (to make government services available in rural areas. There are only about four data centers of decent grade.
- Interconnect the BTS's of operators with fiber instead of the existing microwave connections, in order to secure high-fidelity bandwidth throughput between locations.
- Facilitate the establishment of a local data center market

## Objective 2: Boost demand through initiatives on affordability, purchasing power and awareness

**R4. Increase service affordability by lowering prices, innovating in pricing and partnerships models.** Burundi has the highest fiber density in its region, but utilization is low due to high prices, lack of digital skills and awareness as well as low purchasing power for devices and data. Affordability of terminals is low, given low purchasing power. Among the under-served population, the largest segment consists of those who possess basic ICT skills but cannot afford access and devices. Efforts to boost demand among this segment include:

- Strengthening the weak credit culture and credit infrastructure
- Developing flexible payment terms for data wholesalers and adapting the VAT system that imposes a tax obligation when an invoice (whether proforma or not) is issued.
- Providing special data bundles for use on ecommerce sites.

**R5. Increase purchasing power of the bottom of the population, which hold the greatest for increasing penetration.** The next one million subscribers will predominantly come from the bottom of the consumer ladder. There are already extensive connectivity networks, at least for major neighborhoods, and thus the next area of action is to boost people's purchasing power or reduce costs of access.

**R6. Increase awareness and availability of digital solutions**. The digital economy is still a novel idea in Burundi. Consumer attitudes and poor perceived value of digital goods (including quality and merchant fulfilment) are key obstacles to the growth of digital businesses. At present, consumers manage this problem by contacting the seller to inspect the product, a practice that reduces the practice of e-commerce. It is essential to expand awareness around the connectivity infrastructure already in place and how to unlock its potential in Burundi. Digital adoption requires knowledge and familiarity of digital technology how to access to it, and how to best apply it.

**R7. Increase demand clusters and supporting content and services.** Authorities should incentivize more complex use cases for the use of connectivity such as e-commerce platforms and creative content such as cultural entertainment and social media. In doing so, it would be useful to re-imagine and integrate systems for logistics, payments and identification. Additional areas include:

- Encourage digital finance, including the penetration of new use cases beyond mobile money.
- Accelerate digital skills and entrepreneurship initiatives and improving their design.
- Sensitize students and entrepreneurs on IT opportunities.

## Objective 3: Strengthen capacity for regulation of data protection and cybersecurity

**R8. Update the legal framework**. A new legal framework is required to tackle emerging issues on infrastructure sharing, PPPs, e-commerce, data protection and cybersecurity. This will help to promote competition through a truly transparent and open access framework. An open access framework will fill the gaps in fiber optic and last-mile broadband infrastructure disrupted by BBS' vertical model.

**R9. Review multiple taxation issues by setting up an Industry Working Group**. A working group with the oversight of the regulator ARCT or the inter-ministerial agency SETIC, should review multiple taxation cases (such as the situation with the international gateway), and enlist the support of all stakeholders, articulate and publicize the telecom industry's position on the negative impact of multiple taxation. It This will help develop strategies for addressing and managing the threat posed by multiple taxation to the growth of the ICT industry. A new framework will provide nationwide broadband on an open-access, non-discriminatory basis, thereby lowering costs and facilitating affordable access to users.

**R10. Ensure capacity building for the industry regulator ARCT.** Given the critical role of the regulator and its currently weak capacity, it is recommended to:

- Establish technical assistance to update and complete the legal and regulatory framework for electronic communications, to enhance open market terms and ensure fair, non-discriminatory access to transmission networks on an open-access basis.
- Provide ARCT equipment for effective spectrum and terminal control. ARCT does not have the technical capability to oversee and manage the volume of data and other intelligence. Previously, ARCT provided the World Bank with a quotation for the equipment, however the engagement process was shut down due to the monopoly of BBS.
- Increase the regulator's enforcement capacities and autonomy in launching a market study for the definition of the relevant markets and measurement of market dominance.

**R11. Strengthen inter-ministerial coordination with the Executive Secretariat for Telecommunications, Information and Communications.** SETIC was established as an autonomous government agency with the authority to provide ICT services to the government and support to the national backbone project and other digital initiatives of Burundi. However, SETIC needs to be reinforced to serve as a comprehensive end-to-end project focal point for ICT projects in the years to come. Its authority will

need to include the ability to lead planning, procurement, and resource and stakeholder coordination for ICT projects. The success of SETIC will depend largely on the support from the highest levels of government to undertake its work. SETIC should have enough capacity for policymakers to trust the agency's judgment and heed its recommendations and allow it to play a strong role in the capital restructuring or privatization of BBS, and the restructuring of the incumbent Onatel.

# 4 Digital Skills

Key messages:

- The digital skills agenda has been identified as a priority, under the new education strategy adopted in 2020
- While foundational digital skills are formally mandated at lower and upper secondary school level, few schools are able to deliver this training in practice
- The formal education system lacks the requisite enablers to delivery digital skills training, including connectivity, electricity, IT equipment, trained teachers etc.
- Locally available advanced-level digitals skills training is inadequate, and not aligned with demand.
- Better inter-ministerial coordination, as well as dialogue with the private sector, donors and non-profits is required to address many of present digital skills gaps

## 4.1 Importance of Digital Skills

### 4.1.1 Socioeconomic Rationale for Investing in Digital Skills Development

**Digital skills represent one of the most transversal building-blocks of the digital economy.** For Burundi, the development of a digitally savvy workforce is essential to support the emergence of new sectors, services, as well as access to new and more advanced jobs. The entire range of basic to more specialized digital skills can support job creation, by preparing the workforce for stronger technological development. Technology adoption has been shown to have a more positive impact on job creation for unskilled and lower-educated workers in low income countries than in most higher income countries.[28] In this context, equipping citizens with digital skills is part of the digital transformation process and could be a significant step in enabling innovation and ensuring that the country does not lag behind its regional peers in terms of supporting accelerated digital development. However, as noted in the preceding chapter, weak digital literacy is also one of the key bottlenecks to wider access to digitally enabled services in Burundi and creating a large enough digital consumer base to fuel new digital service development.

Table 4.1: Key indicators of digital skills

| Indicator | Burundi | SSA |
|---|---|---|
| Primary schools equipped with electricity, % (2018) | 8.4 | 39.8 |
| High schools equipped with internet, % (2017) | 0.7 | – |
| Secondary enrollment, % gross (2018) | 48.5 | 53.3 |
| Tertiary enrollment, % gross (2017) | 6.1 | 13.5 |
| Human Capital Index, /100 (2017) | 55.5 | 53.0 |

Source: UNESCO Institute for Statistics, World Bank

[28] World Bank (2019). *World Development Report 2019: The Changing Nature of Work.* Washington, DC: World Bank.

### 4.1.2 Alignment with Country Development Strategy & Goals

**Burundi has established several digital skills targets, as part of the *National ICT Development Policy*.** These include training 50 percent of civil servants in basic ICT skills and having at least 1,500 advanced ICT professionals in the country by 2025. The Ministry of Higher Education and Scientific Research recently validated a new strategy that established related targets, which is due to be rolled out in 2020. Moreover, the *Ministry of Youth, Posts and ICT*, (MoYPICT) has sought to increase access to ICT-related opportunities for young Burundians, through a series of smaller pilot initiatives and workshops that support digital skills.[29]

**The education sector recently began grappling with the digital skills agenda, however, limited progress has been made to date.** *The Ministry of Basic and Secondary Education* has begun to integrate digital skills in the curriculum, from basic through to secondary level. Integrating ICT in education is seen as means of enabling enhanced education delivery and training. A recent report prepared by *the Ministry of Higher Education* also looks at how to provide increasing support for advance and high-end digital skills linked to big data and AI.[30] However, as it stands, no overarching and dedicated digital skills strategy exists, nor is there a holistic framework for classifying digital skills competencies.

## 4.2 Diagnostic findings: Current State of Digital Skills

### 4.2.1 Digital skills framework

**This chapter applies the DigComp 2.1 Digital Skills Framework[31] to analyze the state of digital skills in Burundi.** According to this framework, digital skills can be broken down into four general proficiency levels:

- **Foundational digital skills: are typically taught at primary and lower secondary school level**, and involve the foundational digital literacy needed to use basic digital devices, tools and applications.

- **Intermediate digital skills: should be provided to students in upper secondary school**, technology programs at TVET institutions, and undergraduate students in courses that apply technology. Intermediate level proficiency would typically be required in middle-level occupations. However, moving forward, intermediate digital skills are expected to be a ubiquitous requirement for all formal employment.

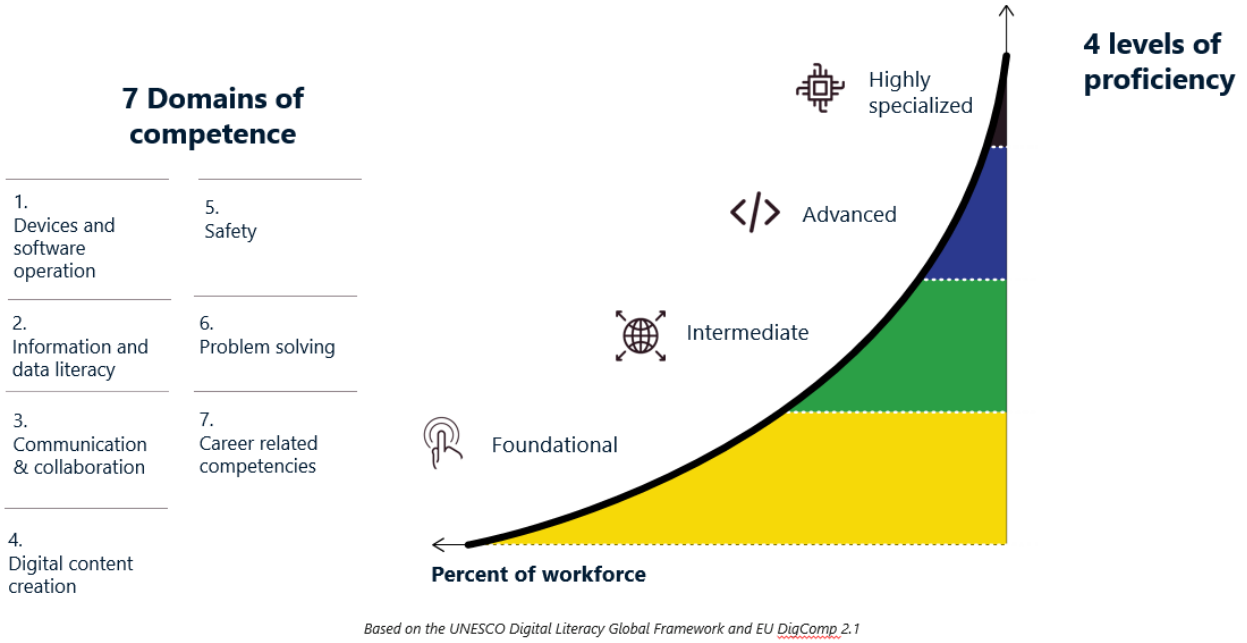
- **Advanced digital skills: are primarily developed through core engineering programs**, especially electrical and computer engineering and science programs. Advanced level proficiency is typically required of occupations with a high level of ICT intensity, involving the application of digital technologies, including IT engineers and, increasingly, finance professionals.

- **Highly specialized digital skills: Are typically provided at the postgraduate (masters and doctorate) level**, focusing on advanced computer science and engineering, as well as applied mathematics and related fields. Highly specialized digital skills are considered a requirement for scientific and advanced ICT professional occupations, which involved the development of new digital technologies, products and services.

More detailed definitions can be found in Annex 3.

[29] The Ministry reference efforts to support digital skills. However, the exact nature is unclear and scale appeared small.
[30] Government of Burundi (2020). *Rapport de la commission chargée de planifier l'ancrage académique ou professionnel des lauréats des écoles d'excellence en rapport avec l'intelligence artificielle.*
[31] European Commission (2017). *DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use.*

Figure 4.1: Four levels of digital skills proficiency




Source. UNESCO (2018)

### 4.2.2 Supply of digital skills

#### 4.2.2.1 *Current digital skills levels*

**Data is scant on the present level of digital skills coverage in Burundi.** No data/indicators on digital skills are being systematically collected or tracked by the education sector or the ICT sector, despite related targets being set. Nor is the Burundian National Office for Employment and the Labor Force, created in 2016 under the Ministry of Labor, tracking the supply and demand of digital skills in the labor market as part of regular labor market surveys. In the absence of any official digital skills database at government-level, Burundi's only techhub (BujaHub) has created its own registry of digital talent, recording available programmers that operate locally and the languages they master. Allegedly, this database captures the information of some 23,000 programmers, which would be an impressive figure for such a small country.

**Nevertheless, current levels of foundational digital skills attainment among adults are estimated to be moderate, based on what can be inferred from key education and literacy indicators.** Currently, the adult literacy rate in Burundi stands at 68 percent, suggesting the likelihood of at least a corresponding 32 percent foundational digital skills gap, as literacy is typically considered a pre-requisite for foundational digital skills.[32]

**Educational attainment is low, which suggested low overall foundational digital skills acquisition** particularly as digital skills are yet to be fully embedded in Burundi's basic education system (as will be seen below). While enrollment in primary education is high (see Box 6), the completion rate is only 63 percent and drops to 32.4 percent for lower secondary.[33] Both have been falling since 2013 and 2016, respectively. Educational attainment (of at least upper secondary school) is low among adult over the aged of 25 – a mere 3.3 percent – one of the lowest figures globally.[34] This is likely to have created a limited pipeline of students capable of accessing intermediate to highly advance digital skills

[32] Figures from 2017, UNESCO. See: https://data.worldbank.org/indicator/SE.ADT.LITR.ZS?locations=BI
[33] Figures from 2018, UNESCO. See: https://data.worldbank.org/indicator/SE.PRM.CMPT.ZS?locations=BI&most_recent_value_desc=false
[34] Figures from 2014, UNESCO. See: https://data.worldbank.org/indicator/SE.SEC.CUAT.UP.ZS

training, even when disregarding issue related to the availability and quality of related programs locally (which is explored further below). Moreover, given the current make-up of the Burundi workforce, where over 90 percent are employed in the agriculture sector, the level of intermediate to highly specialized digital skills is also expected to be low, as there are few occupations with a high level of ICT intensity outside the telecommunication sector.

#### 4.2.2.2 *Digital skills pipeline:*

### Basic education: Primary and lower secondary

**The basic education system has critical role to play in building the foundational digital skills base in Burundi.** By embedding foundational digital skills in early grade and basic education (*Le Fondamental*), where enrollment is high, Burundi stands the best chance of ensuring universal foundational digital skills coverage. Notably, students in Burundi that complete primary education have traditionally recorded better reading and mathematics results than most other West and Central African countries. As noted in Box 7, support for foundational basic skills will also need to be complemented by a foundational soft skillset.

**Currently, foundational digital skills are formally part of the national curriculum at lower secondary education level.** Digital skills training is mandated from Grade 7, following 2012 reforms that that sought to prioritize strategic skillsets. However, as it stands, no digital skills initiatives cover primary schools.

**Nonetheless, due to a lack of qualified teachers, weak access to electricity, connectivity and ICT equipment, very few schools deliver related training in practice.** In 2018, UNESCO estimated that a mere 0.7 percent of secondary schools had internet access, and only 8.4 percent of primary schools had access to electricity. According to the Department of Education Statistics, in 2019, the average number of computers per school (both primary and secondary) was a mere 0.43.

### Upper secondary education

**At secondary level (i.e. *post-fondamental*), ICT is allegedly taught as a subject matter.** This course aims to support only foundational digital skills, as intermediary skills are not included. Again, while mandated on paper, only a handful of schools appear to be delivering this course, for similar reasons noted above. Course enrollment does not appear to be tracked, nor are related education outcomes assessed at the end of secondary education. Moreover, in the absence of adequate connectivity, electricity and ICT equipment etc., where offered, digital skills are taught in theory rather than through practical application, limiting their impact and value.

**However, a more concerted effort to deliver foundational digital skills training appears to be made at Burundi's high schools of excellence.** There are currently five high schools of excellence, established across five regions. In academic year 2019-2020, these schools enrolled a total number of 1,287 students (839 boys and 448 girls), selected on merit and entrance exam scores. These schools appear to have some IT equipment, albeit unevenly distributed. While highly qualified teachers are recruited and a rigorous selection process is following by these schools, weak access to qualified teachers in digital subjects hampers effective

### Box 6: Snapshot of the Burundi Education System

**Basic Education**
- School age population: 2,480,260
- Gross Enrollment Ratio (2018): 111% (total), 111.2% (female), 111.7% (male)

**Secondary**
- School age population: 692,953
- Gross Enrollment Ratio (2018): 48.5% (total)

**Vocational Education**
- Enrollment 2018-2019: 61,005 (48% female)

**Tertiary**
- Non-university enrollment: 6,205 (31.2% female)
- University undergraduate & post-graduate enrollment: 61,726 (31.2% female)
- Gross Enrollment Ratio: 6.1% (total), 3.75% (female), 8.37% (male)

**Out of School Children**
- 19,8% of children aged 7 to 16 were out of school (90% of whom were never in school and 10% were in school but dropped out)
- 23% of children aged 6 to 14 were out of school (including 94% who were never in school)

Source: UNESCO; World Bank; Ministry of Education; Annuaire des Statistiques Scolaires; Indicateurs sur l'enseignement au Burundi

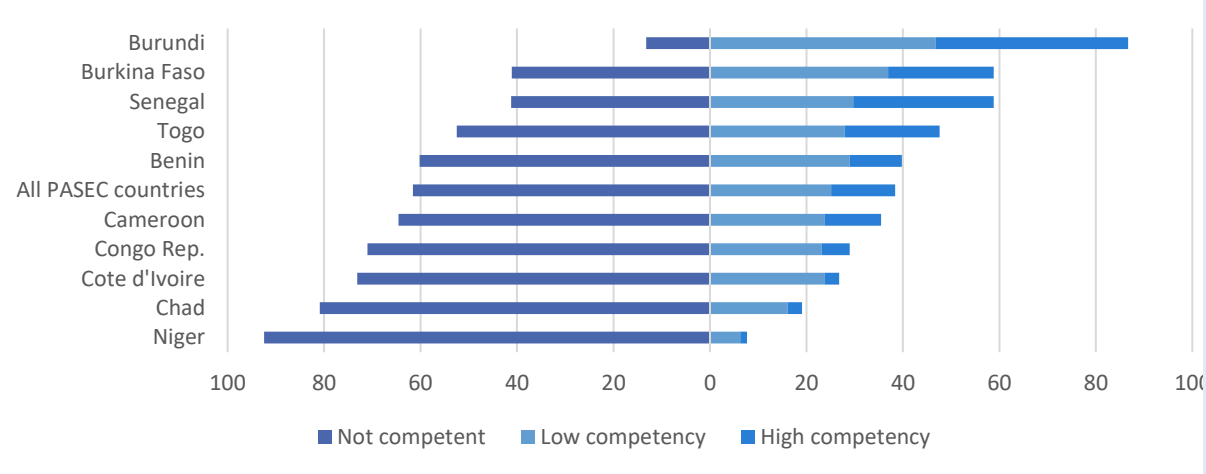
delivery of related training. Government is, however, committed to creating new higher education disciplines available for students graduating from these schools, including areas such as technology and AI.[35]

### Box 7: Building mutually reinforcing foundational skills

**Beyond digital skills, it is worth highlighting the need for complementary soft skills.** The twenty-first century labor market is placing an increasing emphasis on key soft skills such as effective problem solving etc. Employees need to be team players, critical thinkers, and effective communicators. Burundi's formal education system will thus need to recognize and make necessary efforts to include these soft skills in its education delivery, at all levels of education.

**According to PASEC 2015, Burundi's performance is significantly superior to other countries in reading (Kirundi) and mathematics in Grade 2, and in mathematics and reading (French) in Grade 6.** In Grade 2, 79 percent and 97 percent of students achieved "sufficient competency" in reading and mathematics, respectively, outperforming all other countries in SSA. (Figure 4.2). While this is a good starting point, strong foundational literacy and numeracy skills, will need to be complemented with strong socio-emotional skills.

Figure 4.2: Competency levels in mathematics




**Improving Science, Technology, Engineering, and Mathematics (STEM) teaching in basic and secondary education will be essential to creating a pipeline of students who can access higher education programs in related fields.**

Source: World Bank WDR 2019

## Technical and vocational education and training (TVET)

**According to education authorities, foundational digital skills training has been integrated in all 286 public and private technical schools[36] in Burundi** – currently, some 61,005 students are enrolled. In terms of more intermediate-level courses offered, typical modules include general ICT management, including database management, accounting software, and computer maintenance.

## Higher education level

**Burundi has committed to ensuring universal foundational skills coverage at higher education institutions (HEI).** However, digital skills training in HEIs suffers from similar challenges to primary and secondary schools, including weak access to computer terminals and digital equipment, low connectivity and a lack of other basic digital and analogue prerequisites. Burundi Education and

[35] Government of Burundi (2020). *Rapport de la Commission chargée de planifier l'ancrage académique ou professionnel des lauréats des écoles d'excellence en rapport avec l'intelligence artificielle.*
[36] 108 are public and 178 are private

Research Network (BERNET) has sought to provide many HEIs with affordable broadband, yet at present, only 15 HEIs are connected (see Box 8).

**Meanwhile, many HEIs, including public universities, have already started to include ICT as either a crosscutting course or as a dedicated department.** There are 38 HEIs in Burundi, which are most likely to offer advanced digital skills training locally. Examples include the Université du lac Tanganyika, where the ICT faculty offers a technical diploma in network maintenance.[37] The University of Burundi's engineering faculty also offers a general course in IT.[38] Overall, most students at this level are enrolled in computer science, software management and network maintenance courses, but very few in programming and software engineering courses. During the 2017/2018 academic year, some 3,431 students were reportedly enrolled in related courses, yet only 25 percent of them were female, according to the Ministry of Higher Education.

**An interdisciplinary commission exists at the higher education level that redefines the curricula every four years and determines the types of certification offered.** Courses offered within HEIs are harmonized and aligned with the East African Community (EAC) interuniversity council, which offers one of the most promising platforms to support regional collaboration on digital skills (Box 8).

### Box 8: Regional collaboration at the HEI level

#### Common Higher Education Area

In 2017, a partnership for a Common Higher Education Area was agreed within the Inter-University Council for East Africa (IUCEA), including Burundi and Kenya, Rwanda, Uganda and Tanzania. The harmonized system fosters mobility of students and academics by aligning course curricula and allowing for credit exchange between universities in the region, while helping to boost quality assurance in the education sector at the EAC level.

#### BERNET & UbuntuNet

BERNET has been working to extend access to affordable bandwidth capacity among HEI. The national network currently consists currently of some 15 interconnected members. Moreover, BURNET was recently integrated in the regional data communications network for National Research and Education Networks (NREN) in Eastern and Southern Africa –UbuntuNet. This development was supported by the European Commission. With a 500 Mbps link from Kigali, Burundi's NREN is now connected to 11 other countries who are members of the UbuntuNet alliance.

Sources: IUCEA, UbuntuNet Alliance

**Universities do not systematically track where students end up and whether they manage to access employment, following graduation.** This would help determine quality and relevance of existing programs available. There are, for example, no tracer surveys conducted to date. However, according to the Permanent Secretary of the Ministry of Higher Education, anecdotal evidence suggests that ICT laureates generally perform well and are able to gain employment or establish their own business.

**Some private universities have been known to use distance learning solutions at a very basic level, while other universities are currently exploring potential distance learning programs.**[39] However, COVID-19 has illustrated that local capacity to distance learning remains limited. Weak access to digital devices and connectivity among both students and teachers is likely to hamper further scale-up. As notes in Chapter 3, according to 2017 ITU figures, a mere 0.3 percent of households had wired internet, and only 1 percent had a computer at home.

[37] See: https://ult.bi/fr/institut-de-maintenance-et-reseaux
[38] See: http://www.ub.edu.bi/wp-content/uploads/2020/04/MAQ-FSI.pdf
[39] According to stakeholder consultations, Mount Kenya University, Bujumbura International University and International University of Equator currently have implemented distance learning solutions. The University of Burundi, University Lumière of Bujumbura and the University of Great Lakes are currently exploring these tools.

#### 4.2.2.3 *Private sector and NGO initiatives related to digital skills*

**Private providers also contribute to digital skills training delivery in Burundi – often complementing and/or filling the gaps left by the formal education system.** Many of these trainings are offered on a commercial basis, on-demand, to interested firms looking to upskill or offer in-service capacity building programs for their staff, but also to individuals. For example, anecdotal evidence suggests that staff are sometimes sent on rapid digital skills training to, for example, learn the basic Microsoft Office package. Typically, these programs are offered by a recognized institute and lead to a certification. However, in the absence of a unified and integrated policy governing digital skills training, there is no quality control of related programs, yet stakeholder consultations suggest that they are valued. Notably, some companies in the telecoms sector train recent graduates in-house, as many lack adequate and applied work experience. There appears to be room to build on and formalize related schemes by increasing industry-academia exchange to enhance access to on-the-job training and internship programs for recent graduates that can help smooth the study-to-work transition.

**Burundi's only techhub, BujaHub, is also running a series of digital skills initiatives.** These include the 'Digital Generation' program, which targets secondary school students, with the aim of teaching them how to use social media and create an online profile. The 'Digital Ladies' platform aims to provide local female entrepreneurs with intermediate digital skills that allow them to establish an online presence and use online marketing tools. So far, this scheme has provided training to some 100 women, with plans to cover a further 2,000. BujaHub also runs 'WebDev', a four-month long website development training program, launched in partnership with the Integrated Polytechnics University. Sor far, 30 web-developers have been trained. Finally, BujaHub is also an implementing partner of the 'Digital Skills 4 Africa' initiative, run by Google, which is targeting 18,000 university students and members of youth, church and community groups, across four Central and Eastern African countries, with foundational digital skills training to improve access to jobs online.

**Development partners have also piloted a handful of digital skills schemes, but few at scale, and neglecting key groups such as out-of-school youth.** For example, the Alliance Française is providing some training in website development, using Java Script. In the past, UNESCO has hosted inter-school hackathon, targeting girls who can code.[40] NGOs, such as Libraries without Borders, have also sought to pilot access to mobile learning and reading content in returnee communities, in partnership with UNDP.[41] Additionally, UNWOMEN have supported digital literacy schemes for women in Burundi. Better donor coordination on this agenda could support scale up, given the strong interest displayed by both the public and private sector in addressing the digital skills gap.[42] For example, there is an opportunity to anchor related initiatives in the community ICT centers that will be financed under the Universal Service Fund (USF), discussed in Chapter 3. As it stands, digital skills programs that cater to out-of-school youth and adults working in the informal sector appear to be wholly insufficient.

### 4.2.3 Demand for digital skills

**While there is no official data available, stakeholder consultations suggest that employer demand for basic digital skills is high.** The absence of platforms for online job posting also makes it tricky to gain a true sense of current demand. However, more and more small and medium enterprises (SME), as well as large corporations – particularly in the telecom sector – indicate that there is a much higher demand for skilled ICT professionals than available supply. Further dialogue between industry-academia could help create a more complete picture of current demand (disaggregated by digital skills level), and in turn support the development of a demand-driven curriculum in the TVET and higher education sub-sectors.

**As it stands, available HEI education programs in ICT appear to be oversubscribed**, pointing to both an inadequate local supply of training, but also high demand among students who see the value and potential employment opportunities attached to this skillset. For example, the University of Burundi

[40] UNESCO (2018). *YouthMobile: Empowering the next generation*.
[41] See: https://www.librarieswithoutborders.org/countries/burundi/
[42] UNESCO (2018). *Synthèse de l'état des lieux de la recherche-développement au Burundi.*

can only accommodate 30 students per year in digital skills-related programs yet receives over 500 enrollment request each year.

### 4.2.4 Constraints to Developing Digitally Skilled Labor

#### 4.2.4.1 *Absence of an effecting institutional and digital skills framework*

**While the Government has displayed a strong commitment to equipping its citizens with digital skills, a unified and integrated framework for digital skills is still missing.** This will be critical in guiding the development of future policies, standards, programs and curricula that ensure that strategies adopted in this area are operationalized, which has unfortunately not been the case in the past. This will also be key in conducting more comprehensive digital skills assessments, which help bridge present digital skills data gaps, map and align existing and future digital supply and demand (discussed in Section 4.2.4.4). The new National Commission, in charge of Science, Technology and Innovation (STI) can potentially act as a focal point in the STI community.

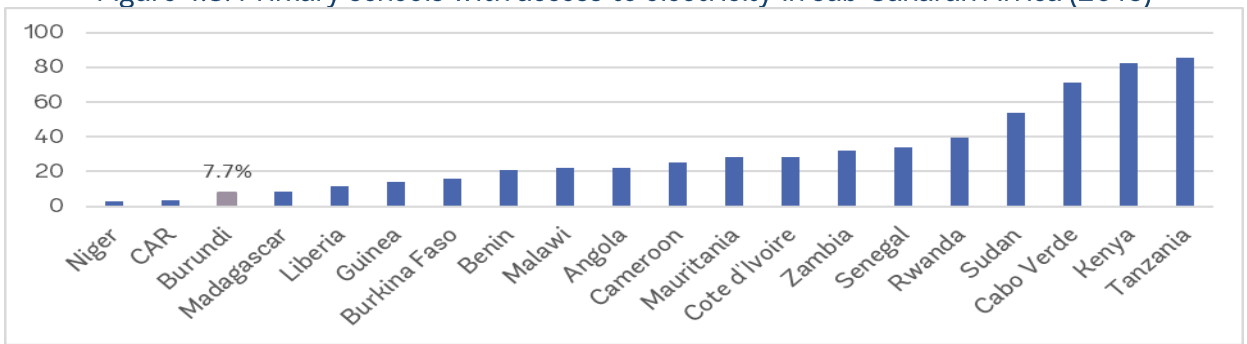
**Despite the integration of ICT in the existing curriculum, there is no dedicated curriculum for digital skills.** This is needed to help guide teachers and ensure uniform quality in teaching and training delivery. Moreover, the regulatory gap in cybersecurity and ICT ethics are likely to limit integration of related components in the curriculum. General cyber awareness, allowing users to safely navigate the web and avoid scams etc., should be an integral element of building foundational digital skills at all levels in Burundi, and thus needs to be integrated in the curriculum.

**Moreover, there is currently no coordinated effort and overarching vision for the digital agenda at the national level.** There is, for example, scope for great collaboration between the education and ICT sectors. Neighboring countries, such as Kenya, have created inter-ministerial committees to support successful integration of digital skills in the education systems, ensuring that all key enablers are considered.[43] These structures typically include the Ministry of Education (leadership/strategy/policy), Ministry of Energy (school access to electricity), Ministry of ICT (school access to internet and technology), as well as authorities in charge of teacher training, curriculum and content development. Currently, no working groups capable of developing the digital skills agenda and program expansion nationwide exist. Funding is insufficient, meaning that related working groups that crowd in development partners could also offer potential.

#### 4.2.4.2 *Absence of critical 'digital' and 'analogue' enablers for digital skills delivery*

**Infrastructure. Current gaps in access to electricity and connectivity services in the education sector, identified above, are likely to be a binding constraint on the ability to deliver digital skills training.** Many schools have no electricity; a 2016 benchmarking illustrates that Burundi has some of the lowest figures on the continent (see Figure 4.3). Even fewer schools have reliable internet access.

Figure 4.3: Primary schools with access to electricity in sub-Saharan Africa (2016)




Source: UNESCO Institute for Statistics

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**Technology (hardware & software): The education sector also lacks the requisite ICT equipment.** Access to computers and other necessary basic IT equipment is extremely limited. When addressing the issue of insufficient access to equipment, it will also be critical to consider the technical support required to enable regular maintenance. Experience suggest that this aspect is often neglected, leaving equipment in disrepair. Nascent efforts have been made to expand access to computers and basic software at secondary school level, piloted by the MoYPICT (see Box 9). Without the requisite equipment and infrastructure digital skills will continue to be taught merely in theory.

**Content development. The absence of suitable teaching material and digital content is likely to be another challenge.** Teachers will need to be equipped with not only better curriculum, but also with adequate tools and knowledge to effectively deliver it.

**Trained teachers. A lack of qualified teachers to teach digital skills, and/or confident to leverage digital tools as part of their teaching is another challenge.** The need for qualified teachers with the requisite content knowledge and the pedagogical expertise to teach core ICT skills, integrate ICT in their teaching practice, and provide basic technical support is reportedly higher than the available number of teachers. Creating a digital learning environment requires teachers to possess the digital skills to deliver training, and the motivation to do so.

#### 4.2.4.3 *Weak private sector engagement*

**Addressing gaps in digital skills development will require closer partnerships with the private sector.**

**Box 9: ICT clubs – a rural high schools initiative**

**ICT clubs have been set up in twelve secondary schools**. Although the coverage is small and challenges such as access to electricity are prevalent, ICT clubs provide students with the opportunity to become familiar with computers, basic software such as Microsoft Word and Excel, as well as learn to navigate the web. ICT clubs were first launched in 2016 and focus particularly on improving access to digital solutions in rural schools.

Source: UNESCO (2018). *YouthMobile: Empowering the next generation.*

Targeted management skills training would increase adequate labor supply, boost labor productivity and reduce poverty. In Burundi, the private sector is not involved in preparing education sector policies, strategies, curricula and programs. This prevents the development of a demand-driven curriculum sensitive to labor market needs, and also limits scope for industry placements, that could facilitate the school-to-work transition. At the higher education level, there is a lack of university-industry learning platforms providing real-world digital skills learning experiences for university students. In addition, rapid-skills training programs on digital skills, such as coding bootcamps or other similar learning models run by private providers are at a nascent stage. Private digital skills providers such as *Andela*, active in neighboring Rwanda and Kenya, are largely absent in the Burundi.

**The private digital service providers could be playing a bigger role in educating consumers to expand the foundational digital skills base**. In many neighboring countries, MNOs play an active role in supporting public foundational digital skills initiatives, which enable them to expand their consumer base and profit margin (e.g. by increase subscribers' data usage). While related initiatives should make commercial sense, MNOs in Burundi claim that their profit margins are too slim to be reinvesting in related initiatives.

#### 4.2.4.4 *Large data gaps*

**Weak labor market data is hampering effective policy development, planning and decision-making.** A lack of data on the current and future supply and demand of digital skills for each competency level is a key constraint to developing a better policy response. Reliable and timely data on labor-market demand would help policymakers evaluate and decide on how to develop Burundi's digital skills base.

More precise information on the number of existing and projected vacancies requiring digital skillsets would assist efforts to further assess and ensure that the supply of digital skills is adequate.

**Better data on digital skills teaching outcomes is needed.** A high frequency survey is currently being piloted at primary level to collect better data on skills delivery.[44] A similar approach to tracking digital skills delivery could be considered for secondary, TVET and HEI. Data collected will be collated in an integrated Education Information Management System, which is being upgraded (more on this in the next chapter, which reviews use of digital platforms in government).

## 4.3 Recommendations & Next Steps

**Teaching foundational digital skills in Burundi remains a challenge, in the absence of key enablers.** While new strategies have been adopted, significant investments are needed to introduce the required infrastructure, hardware/software, as well as boost teacher training. Further work on curriculum and content development is also necessary to effectively embed digital skills in the formal education system. Demand for digital skills appears to outstrip supply, but in the absence of better data, crafting targeted policy responses will be difficult. There appears to be room to improve the quality and availability of existing advanced-level training available, creating entry points for crowding in the private sector in more effective ways e.g. to roll out rapid skilling initiatives and bootcamps.

Table 4.2: SWOT analysis on digital skills

| Strengths | Weaknesses |
|---|---|
| • **Strong commitment to the agenda** displayed by the line ministries in the education sector.<br>• Digital skills are **formally part of the lower and upper secondary school curriculum**, and **integrated at TVET level**<br>• **Efforts to integrate digital skills at HEI**<br>• **Participation in regional and international initiatives** informs digital skills strategy<br>• Commendable **results in relation to foundational literacy and numeracy skills** | • **Low general appropriation and use** of ICT solutions in government and society<br>• Gaps in **adult literacy**<br>• **Data gaps** on digital skills - **weak tracking** of learning outcomes and student placements<br>• **Limited access to enabling infrastructure and equipment, and technical support**<br>• Lack of **qualified teachers**<br>• Lack of **applied training and work experience** for HEI graduates<br>• Complementary **foundational soft skills are missing**<br>• **Digital skills curriculum and content** not fully developed<br>• Quality / availability of **advanced level training is inadequate.**<br>• **Lack of gender parity** at HEI |
| **Opportunities** | **Threats** |
| • **Strong demand** for acquiring digital skills among Burundi's youth<br>• Potential for greater **public-private collaboration**<br>• Scope to scale-up role of **private sector providers and development partners** | • **Weak operationalization** of existing mandated policies in the formal education sector<br>• **Limited coordination** on the digital skills agenda<br>• Absence of **overarching strategy and skills framework**<br>• **Insufficient participation** of the actors concerned in the formulation of key policies – including **weak dialogue with private sector** |

[44] Piloted under the WB Early Grade Reading Project. This survey will cover 13 percent of all primary schools. Data will be collected via a tablet-based application. While analyzed at centrally, results will be shared will local authorities and school to support better education outcomes.

| | |
|---|---|
| | • **Lack of cybersecurity / ICT ethics standards,** hampering their inclusion in the curriculum |

**The following recommendations could support the development of digital skills in Burundi:**

## Objective 1: Build the foundations for digital skills development in the formal education system

**R1. Establish an integrated and well-coordinated national framework for digital skills** that can inform curriculum development, needs assessments and teacher training. The framework should clearly define each of the digital skills and competency levels, as well as detail existing and projected labor-market demand. It should also propose a consolidated response recognizing the current digital skills gap, as well as supporting movement towards a more coordinated approach.

**R2. Refine the digital skills curriculum** The existing curricula could be expanded to include areas such as digital literacy, digital entrepreneurship and an introduction to digital media. Complementary soft skills such as creative thinking, problem solving and teamwork also need to be included in the curriculum. Foundational digital skills could be initially introduced as a "subject" for high school students, before being formally embedded across the basic education and secondary school curriculum, with clear digital content teaching and quality assessment methods.

**R3. Create an inter-ministerial forum to ensure that critical enablers are in place.** Better inter-ministerial coordination will be essential in ensuring that all the requisite enablers are in place to create a conducive environment for digital skills uptake.

**R4. Increase dialogue with the private sector.** The formal education system and the private sector should effectively partner to enhance the quality of digital skills training, particularly at TVET and higher education levels. Industry-academia exchange needs to be expanded to improve delivery of a more demand-driven education program and expand opportunities for practical training.

**R5. Equip schools and HEI with the requisite infrastructure and IT equipment.** Additionally, teachers will require technical support for teachers to troubleshoot when faced with hardware, software, and internet connection issues.

**R6. Equip teachers with the requisite skills to delivery digital skills training**. Equipping teachers with strategies to develop digital skills is also a vital prerequisite. Regular teacher training in ICT-related fields (not just the ICT educators) needs to be enhanced to develop sufficient competencies to ensure their students become digitally savvy.

**R7. Improve quality of STEM education**. Pursuing advanced level digital skills require a solid foundation in STEM. Government should take deliberate actions to also improve girls' participation in STEM to support greater gender parity for advanced-level digital skills.

**R8. Improve completion and transition rates to secondary education.** Adopting standards for secondary school completion will be particularly important, as current drop-out rates mean that many students forgo the opportunity to acquire STEM and digital skills via the basic education system.

## Objective 2: Align digital skills supply and demand

**R9. Collect and maintain up-to-date information on digital skills and labor markets.** Reliable and timely data that provides an accurate picture of present and future labor-market demand for digital skills,

and the related supply (both in terms of quantity and quality), can help policymakers evaluate and decide on how to develop Burundi's digital skills base. Given that digital skills are cross-cutting, the required inputs for this data collection exercise are likely come from a wide range of stakeholders.

**R10. Asses the quality of existing digital skill programs.** Further work is necessary to review the quality of existing programs and track related education outcomes.

## Objective 3: Foster better collaboration with key stakeholder to expand non-traditional and innovative approaches to digital skills development

**R11. Engage all relevant national and international stakeholders in digital skills agenda.** Effectively engaging stakeholders would help to create strong buy-in for the digital skills framework and related strategies, as well as ensure adequate funding by donors. Non-profits and donors are likely to play a key role in ensuring that digital skills initiatives cover marginalized and neglected groups.

**R12. Crowd-in more private sector education providers.** There is scope to expand access to bootcamps and tap into the rapid up-skilling models developed by private sector digital skill providers like Andela.

# In Focus 1: Gender and ICT

**Burundi has a low-ranking on the Gender Inequality Index – it placed 124th out of 162 countries in the 2018 ranking, with varying progress over different indicators.**[45] Maternal mortality is high: for every 100,000 live births, 712 women die from pregnancy related causes.[46] Encouragingly, gender representation at government level is comparatively strong: at present: 38.8 percent of seats in Burundi's parliament are held by women.[47]

## Accessing Internet services

**While primary data around the digital gender divide is not available, estimates suggest that women's use of the internet is much lower than men's in Burundi** – the Digital Gender Gap calculates a gender gap of around 30 percent in internet use,[48] and just over 20 percent in mobile use.[49] According to Facebook Audience Insights, only 32 percent of Burundi's Facebook users are women, and primarily younger women – some 81 percent of all female users in Burundi are 34 years or younger. Meanwhile, 67 percent of all Facebook usage is centered in Bujumbura, suggesting that women in rural areas are at a disadvantage. Although Burundi has a Universal Service Fund (USF), discussed in Box 3, this mechanism is not currently be leveraged to serve digitally excluded groups, such as women, with targeted initiatives (albeit work is being done to support rural connectivity).[50] Income barriers are likely to be a larger barrier for women, making both mobile devices and internet services unaffordable.

## Digital literacy

**While there is no data available around women's digital literacy, the digital gender gap coupled with education data suggests that digital literacy is an access barrier for women.** There is a consistent gender disparity across key education metrics – 61 percent of women are literate, compared with 76 percent of men; women receive a mean of 2.7 years of schooling compared to 3.6 years for men; a mere 7.5 percent of women have reached at least a secondary level of education compared to almost 10 percent of men.

## Accessing digital financial services

**As will be discussed further in Chapter 6, financial and economic inclusion remains very low in Burundi – and even lower for women.** In 2014, only 6.7 percent of women aged 15 and above recorded owning an account.[51] Stakeholder consultations suggested that women agriculturalists would stand to benefit from increasing mobile money adoption: in Burundi, women typically grow the produce. However, because commercial activities are largely undertaken by men, women have little control of household income. Women's participation in the labor market, at 80.4 percent, is higher than men at 77.6 percent. Mobile money accounts would thus allow women them to sell goods and save money discreetly.

## Data Gaps

**There is no data around women's formal identity; overall better gender data is needed to inform key interventions.** A gender assessment should be carried out to identify and address gaps, in greater detail. Any study conducted should include data on digital and financial behaviors, as well as identity.

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[45] http://hdr.undp.org/en/countries/profiles/BDI
[46] Ibid.
[47] Ibid.
[48] Digital Gender Gaps – Retrieved at https://www.digitalgendergaps.org/
[49] Ibid.
[50] Web Foundation, 2018. Retrieved from: https://webfoundation.org/docs/2018/03/Using-USAFs-to-Close-the-Gender-Digital-Divide-in-Africa.pdf
[51] Findex, 2017

## Supporting female digital entrepreneurs

**There is some promising activity around digital entrepreneurship: BujaHub's 'Digital Ladies' platform provides Burundian women with digital skills and tools that enables them to take part in the digital economy**, focusing on entrepreneurs of all sectors, the unemployed.[52] To date, around 100 women have been through the training. However, there are plans to scale this to 2,000.

In-Focus Figure 1: BujaHub training for 'Digital Ladies'

## Recommendations:

- **R1. Any digital initiatives developed should be sensitive to the barriers faced by women**
- **R2. Dedicated digital literacy programs are needed for women to ensure equal access**
- **R3. Preferential financial schemes could facilitate women' access to digital devices**
- **R4. Any new ID systems should ensure the enrollment of women**
- **R5. Better data is needed to identify and track the digital gender gap.**

[52] https://www.bujahub.com/projects/digital_ladies.php

# 5 Digital Platforms

Key messages:

- **The Government has developed an emerging online presence, but it is largely restricted to offering "information-as-a-service".**
- **Burundi requires several of the building blocks needed to implement a whole-of-government approach, which contributes to fragmentation.** Many initiatives have so far been implemented at sectoral level, by line ministries, leading to weak use of shared systems, services and standards.
- **Burundi lacks many enablers needed to develop a vibrant digital platform ecosystem.** These include an enabling regulatory environment, virtual and physical enablers, as well as market and behavioral enablers. Key among them – a centralized digital ID, affordable connectivity, electronic devices and wide digital literacy to ensure universal access.
- **The local e-commerce industry is in its infancy** and use of commercial platforms in the private sectors is low. Further digital adoption will likely be a pre-requisite for future e-commerce investors

## 5.1 Importance of Digital Platforms

### 5.1.1 Socioeconomic Rationale for Digital Platform Development

**Digital platforms play a critical role in connecting people, businesses and the Government – facilitating transactions and the exchange of information, goods and services in more efficient and convenient ways.** In Burundi, digital platforms are likely to play an instrumental role in connecting rural communities with urban hubs, for example providing new and cost-effective ways of expanding service delivery to remote parts of the country, as well as by connecting rural farmers to global value chains and markets. However, the proliferation of digital platforms also risks exacerbating the existing urban-rural digital divide, if disadvantaged groups are not provided with the means to connect and fully benefit. Moreover, without the right oversight and regulation, digital platforms raise new risks e.g. in relation to data protection and privacy, as well as market concentration that are explored further below.[53]

**This chapter analyzes the state of two categories of digital platforms relevant to Burundi's digital development: public digital platforms and private digital platforms.**

- **Public digital platforms** can increase the efficiency and effectiveness of core government functions and services, reduce unnecessary duplication of systems, combat fraud and corruption by increasing the security and traceability of transactions, and improve civic engagement and accountability, as well as support better service delivery. When designed with a whole-of-government and user-centric approach, digital platforms can thus significantly improve operational and economic efficiency of government operations and public service delivery in Burundi.

[53] World Bank Group (2016). Digital Dividends. World Development Report 2016

- **Private digital platforms** can lower transaction costs and support innovative products and services, as well as facilitate interactions between producers and consumers. Digital platforms support the creation of a digital marketplace that can help foster greater competition and improve market intermediation. By aggregating supply and demand, digital platforms help create new and inclusive markets as well as opportunities for new Burundian companies to reach new customers domestically, across the region, and beyond by contributing to global growth in e-commerce. Moreover, digital platforms can offer innovative solutions and products that help bridge gaps in traditional service access or delivery, and thus address fissures in the market. In Burundi, where unemployment is prevalent and informal activities constitute a significant proportion of the economy, digital platforms can help create growing opportunities for employment in the emerging "gig-economy", via platforms that offer on-demand services. In neighboring Rwanda and Kenya, digital platforms thus employ some 24,000 and 286,000 people, respectively. [54]

### 5.1.2 Alignment with Country Development Strategy & Goals

**The need to development both public and private platforms in Burundi is highlighted by the PNDTIC.** The fourth strategic pillar under this policy aims to promote "e-Government, e-Governance and Burundi online"; twelve priority actions are articulated under this section (see Box 10).[55] However, in the absence of funding and a clear roadmap for implementation, many of these priorities are yet to be actioned. This explicates the reasons why Burundi continues to rank poorly in relation to key digital platforms indicators, as seen in Table 5.1.

Table 5.1: Key indicators of digital platforms

| Indicator | Burundi | SSA |
|---|---|---|
| **Public platforms** | | |
| Digital Adoption Index, Government cluster /100 (2016) | 41.9 | 39.5 |
| E-Government Development Index /100 (2018) | 29.9 | 32.9 |
| ID coverage % (2018) | 73 | 66.2 |
| Online Services Index /100 (2018) | 30.6 | 35.4 |
| E-participation Index /100 (2018) | 30.9 | 34.5 |
| Statistical Capacity Score /100 (2019) | 67.8 | 59.1 |
| Cybersecurity Index /100 (2018) | 8.7 | 29.5 |
| **Private platforms** | | |
| B2C E-commerce Index /100 (2019) | 9.0 | 29.0 |

Source: WB, UNDESA, UNCTAD

**Box 10: Priority actions identified by Government in relation to digital platforms**

Twelve priority action are identified by the PNDTIC 2011-2025, aimed at promoting "*e-Government, e-Governance and Burundi online*":

1. Identify prerequisites to support e-Government
2. Adopt a vertical and horizontal approach to the implementation of e-government
3. Implement administrative reform to develop the public sector
4. Make the public sector more effective and efficient
5. Use appropriate technologies for e-Government
6. Broaden the application of private-public partnerships
7. Improve accountability
8. Improve transparency
9. Improve citizen participation in good governance
10. Develop a digital platform of information exchange for private sector participation
11. Establish an information and exchange portal to foster private sector investment
12. Encourage the adoption and use of ICT in the private sector

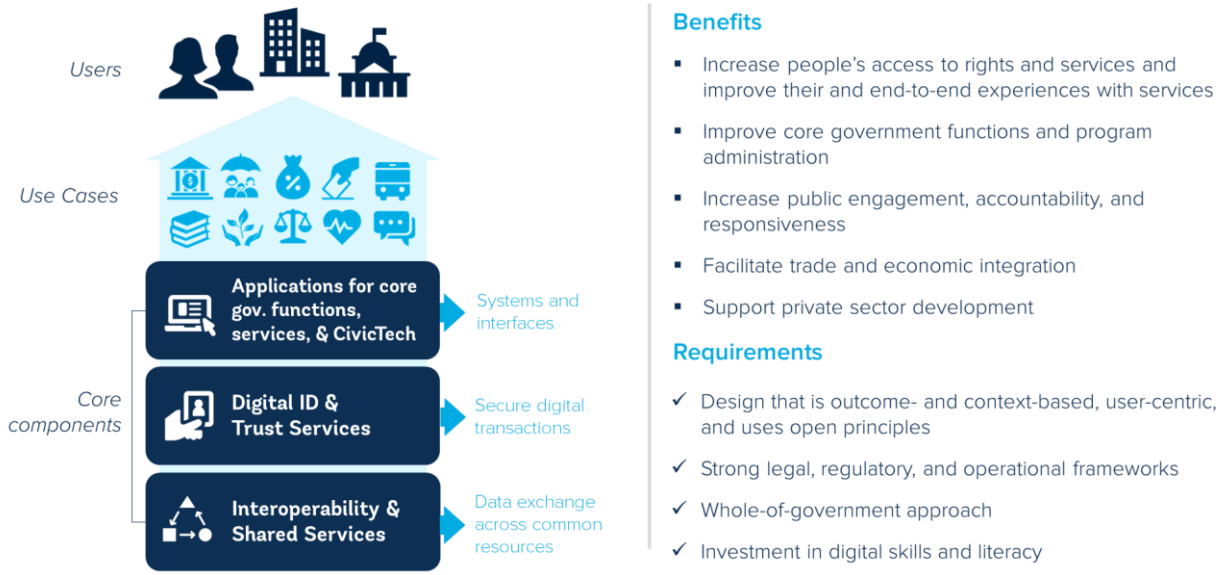
[54] See: http://researchictafrica.net/wp/wp-content/uploads/2018/12/DInfo_V11.pdf

[55] Government of Burundi (2010). Politique Nationale de Développement des Technologies de l'Information et de la Communication du Burundi (2010-2025).

## 5.2 Diagnostic Findings: Current State of Digital Platforms

### Public Sector Platforms

Figure 5.1: Public digital platforms: benefits and requirements




Source: World Bank DE4A

**Burundi ranked 166th of 193 countries in the 2018 UN e-Government Development Index (EGDI), in 2018, reflecting modest progress made in developing nascent e-government capabilities**. It also ranked low in both the Digital Adoption Index, Government sub-index (121/180) and E-participation Index (147/193). As it stands, few back-end systems, process or databases have been fully digitized, and many administrative processes and services remain paper-based. While Government has developed an online presence, it is for the most part only able to offer simple one-way informational services. As will be seen below, the Government is yet to develop many of the building blocks needed to develop more sophisticated transactional services, which are seamlessly integrated, allowing it to reap the full benefits of digital platforms. Weak system integration of solutions deployed limit their impact. Overall, fragmentation and pockets of progress at a sector level characterize e-government initiatives piloted in Burundi so far.

### 5.2.1 Government Capacity to Offer Digital Government Services

#### 5.2.1.1 *E-government: Strategic and institutional framework*

**The e-government agenda in Burundi would benefit from clearer leadership and strategic direction.** Burundi currently lacks an overarching e-government strategy/roadmap, enterprise architecture and interoperability blueprint, which can support movement toward a more integrated and strategic approach to e-government. As will be seen below, this has resulted in handful of disparate systems being rolled-out with limited provision for interoperability and joint standards. An overarching framework could also help crowd-in support from development partners in a more structured way.

**The e-government agenda is notionally led by the Ministry if ICT.** As noted in Chapter 2, SETIC, the implementing arm, is charged with coordinating all large ICT projects within Government. However, too often the Ministry and SETIC are both circumvented, which prevents enforcement of any shared technology standards, as well as drastically reducing cost-efficiency and opportunities for employing a whole-of-government approach to the e-government initiatives in Burundi. MDAs are inclined to implement projects independently, yet often lack the requisite technical expertise to do so. This has contributed to a proliferation of incompatible e-government systems, in terms of framework design,

hardware, software and interfaces used, leveraging non-standardized data formats, etc. Shared elements and common processes are thus not identified during the design stage, making it more difficult to resolve downstream interoperability issues (which are discussed further below).

#### 5.2.1.2 *Core Government Back Office Systems*

**Government digitalization initiatives in Burundi have mainly focused on the development of core back-office systems**. The GoB has deployed a handful back-office systems aimed at supporting central and core government functions, including public financial management (PFM) and human resources (HR) management. However, many key sectors are yet to fully digitize their back-office systems and very few are transversal. Only the health, education and land management sectors appear to have deployed management information systems (MISs). However, these systems are yet to be leveraged to serve citizens more directly through the expansion of front-facing e-health and e-education service delivery. Key systems developed so far include:

##### Public Financial Management Systems

- **Integrated Financial Management Information System (IFMIS):** IFMIS was introduced by the Ministry of Economy, Finance and Development Cooperation in 2006, but took many years to become fully operationalized. For example, the accounting module was only completed in 2019, after residual malfunctions had been resolved. Government is thus yet to produce fully automated public financial accounts through IFMIS. Budget monitoring and internal controls have improved but inefficiencies and delays persist. Moreover, in the absence of interconnectivity (discussed further below), data from the other ministries, departments and agencies (MDAs) still need to be manually inputted into the system, limiting its efficacy. Furthermore, IFMIS is not yet connected with the Burundi Revenue Authority (OBR) or the Burundi Central Bank, which would allow the system to capture public revenue and/or monitor payments made from the Treasury account. There are currently three IT engineers who ensure the maintenance of IFMIS, as well as undertaking data management and processing tasks. Unfortunately the government still relies heavily on the technical support provided by the foreign service provider that initially developed IFMIS, especially for medium to complex activities pertaining to the integration of new functionalities and the adaptation of the system to new PFM regulation. Finally, IFMIS users would benefit from further training in its functionalities to increase its adoption and application across government.

- **Integrated Human Resources Management System**: The system was set up by the Tunisian company SIMAC and launched in 2011. The OPEN *Paie et Ressources Humaines (*PRH) system offers an integrated and scalable solution for managing public sector payroll and the career management of civil servants. It is operated by *the Centre de Traitement Informatique*, placed under the authority of the General Director of the Public Service (in the Ministry of Civil Service) and is co-managed by the General Director of Budget at the Ministry of Finance. The career management, management processing and payroll modules of the platform have been delivered and are in use. An interface module that will allow for the transfer of salary data to the computerized system for budget management (SIGEFI), in order to control and validate payroll data, has been delivered but is not yet in use. It is estimated that close to 99 percent of Burundi's civil servants are registered in OPEN PRH, save for public sector officials working for the Ministry of Defense, public security services[56] and staff of autonomous agencies. Nevertheless, many other sectoral ministries and departments still continue to maintain their own HR management systems that have not been integrated with OPEN PRH.

- **Procurement:** Burundi is yet to implement a fully-developed e-Procurement system but the Regulatory Authority for Public Contracts (ARMP) has an informational website, where provisional public procurement plans of various government institutions are periodically published.

[56] i.e. the system does not cover military service personnel and members of the police force

- **Customs**: Like many other countries, Burundi has adopted SYDONIA World.

- **Electronic archiving of civil servants' files:** funded by UNDP, an initiative was launched by the Ministry of Public Works, Labor and Social security to support the electronic archiving of all civil servant and state agent files in Burundi over a 5-year period. While a roadmap was developed, support for operationalization was suspended following the 2015 political crisis, and due to a lack of funds, the project has not proceeded since.

### Other sectoral management information systems

- **Land titling:** The Improvement of Management and Land Governance Project (PAGGF), 2014-2018, implemented by the European Union (EU) and German Development Agency (GIZ) sought to modernize the Department of Land Titles. In total, some 48,154 paper-based land titles (around 40 percent of the titles listed since Independence) were indexed in an Excel database, and awaiting to be scanned. Some 19 percent of all titles were fully digitized as a result of the project.[57] A land information system (SIF) was also developed to support the initiative, with four modules considered operational. However, SIF is yet to be fully deployed due to lingering interoperability issues between the different modules.

- **DHIS2 & Open Clinic:** DHIS 2 is a flexible open-source web-based health information system, which also supports the use of geographic information systems (GIS), graphics and pivot crosstabs. DHIS 2 contains integrated data on HIV, infectious diseases, reproductive health, nutrition, and disease surveillance covering all health regions, health districts, and hospitals in Burundi.[58] Open Clinic is an integrated hospital MIS that is used for the management of patients' administrative and medical files, mapped to a unique patient identification number. All hospitals and health centers (publics and faith-based ones) use the DHIS2 system. Most have access to IT equipment and connectivity, though occasionally face connectivity issues. Health centers and hospitals enter data themselves directly in the DHIS2. Open Clinic technology is currently available in 23 Hospital (15 publics and 8 privately run hospitals). With the support of the Belgian Development Agency, ENABEL, and the EU, OpenClinic will be extended to a further 14 new hospitals by June 2022, leaving only ten unconnected.

- **Education Management Information System (EMIS): As noted in the preceding chapter, an EMIS does exists.** However, consultation revealed that system is not operating as well as intended, and is somewhat outdated. The WB is thus planning to support the strengthening of EMIS, allowing for more reliable reporting by cleaning and updating the current EMIS database. New survey data collected will also be fed into the new database. Each school will be provided with a unique ID code, making it easier to track school-level performance, based on a protocol for numbering new schools. Moreover, school will be geo-tagged, enabling the use of GIS-based analytics.

#### 5.2.1.3 *Digital Service Delivery*

**Digital Government-to-Business (G2B) and Government-to-Citizen (G2C) service delivery is weak.** Making more public services digitally accessible to citizens through multiple channels lies at the heart of the Government's vision to achieve "Digital Burundi" by 2025 – yet, front-facing e-service platforms remain few and far between. Most public platforms geared towards businesses and citizens consist of informational websites.

**The GoB's e-service delivery capability is restricted to providing "information-as-a-service" – i.e. publishing information online**. Existing websites mainly support single one-directional interactions with

[57] GIZ, EU (2018). Rapport Final PAGGF, 1er Octobre 2014 – 30 Septembre 2018.
[58] MEASURE Evaluation (2019). Strengthening Health Information Systems in Burundi.

users, as opposed to two-way communication where users can interact with government online, or more sophisticated transactional services that support end-to-end digital delivery of service.

**Government has developed an online presence through numerous government websites.** This is typically the very first stage of e-service maturity, illustrating that Burundi lags behind many of its peers in East Africa, who score much higher in global e-government rankings. Currently, some 70 percent of ministries and central government agencies have websites and there is also a central government website.[59]. At present, only five line ministries lack websites, however, local government does not have adequate web presence - only two out of 18 provinces (Gitega and Bujumbura) have websites, and none of the communes.

**However, many of these websites only offer basic functionality, which limits their scope to facilitate digital interaction with users and more advanced e-services.** SETIC, who is charged with managing government ICT services, suggested that more could be done to update these sites – many are written in outdated code, poorly maintained and lack central coordination/management. On average, each site is managed by 1-2 technicians, tasked with maintaining hardware/software and updating the website. Only half of existing sites use the government or country domain names (gov.bi or .bi).

**Less than 20 percent of government websites analyzed have a clear target audience**. While many of them contain a wealth of information, they offer very limited functions. For example, even basic functions are missing, such as downloadable forms/documents, tele-procedures, and messaging functions etc., which would typically be associated with an enhanced web-presence.

**A handful of platforms that aim to centralize information pertaining to key services have been developed:**

- ✓ **Customs Guichet Unique Electronique (GUE):** Launched in 2015 and administered by the Burundi Revenue Authority (OBR), powered by the back-end system SYDONIA World, the system aims to reduce the number of administrative transactions required to clear customs, delivering faster customs clearances through a single electronic window.[60]

- ✓ **Investburundi.bi**: Administered by the Investment Promotion Agency provide a one-stop-shop for those looking to start a business, by collating all relevant information in one place.

- ✓ **Isôko[61]**: Another integrated platform for service delivery is Isôko, a web-based portal launched in 2018, by the Ministry of Civil Service, Labor and Employment (*Ministère de la Fonction Publique, du Travail et de l'Emploi*), with support from UNDP. Isôko aims to provide information to citizens on how to access more than 100 administrative services, covering a range of services from driving licenses to construction permits. This initiative has sought to pool information on the most commonly requested public services available to citizens in one central place. Isôko has been heralded as the most promising initiative expanding e-services to citizens, and yet it remains purely explanatory (i.e. detailing which MDA offers the service, how long it will take to process and how much it will cost etc.), and contains links to other government websites. Citizens thus still need to physically visit a government office to obtain the necessary documents/forms needed for processing, make needed payments and verify their identify, which limits the added value of the service. The platform could easily be enhanced by providing downloadable forms, at a minimum. Like many of the other platforms noted in this chapter, development of Isôko has been spearheaded by a sectoral line ministry, with little input from the line Ministry specializing in ICT and its implementing arm SETIC.

[59] http://www.burundi.gov.bi/
[60] https://www.obr.bi/index.php/publications/actualites/210-nouvelles-formulaire-immatriculation-elechargeable
[61] http://isoko.bi/

**Back-end integration and use of shared data infrastructure also allows the decentralization of some key services, under the Guichet Unique Provincial (GUP) – however, physical processing is still required.** The GUP is an inter-agency service that allow Burundian citizens to locally access five out of the 11 most requested documents (passport, a travel pass for the Great Lakes Economic Community region, driver's license etc.) in ten provinces, instead of traveling to Bujumbura. This allows for biometric documents to be delivered to physical counters in the provinces where citizens can access them. Similar to Isôko, GUP is part of the National Program to Reform Public Administration, which is funded entirely by UNDP.[62]

**The Burundi Revenue Authority (OBR) is one of the only agencies to spearhead movement towards more transactional services.** The OBR has undertaken several initiatives to improve national tax and customs administration, in a bid to increase domestic revenue mobilization**.** As part of this, the OBR has deployed an IT system for the registration of taxpayers, *SIGTAS*, which is connected to the *ASYCUDA World* system for customs administration (detailed above). Taxpayers are registered and identified using a unique tax ID number, which allows the system to communicate the key taxpayer data to both the tax and customs commissions. The IT department of the OBR has also deployed a complete national and urban communications network, connecting all OBR-websites. However, a diagnostic assessment conducted in 2018 found that the data in the taxpayer registry is often inconsistent, unreliable and incomplete, as no automated accounting system exists for other key tax functions such as the filing of taxes and tracking of large tax arrears.[63] In terms of user engagement, OBR's website is rich in information, and enables the user to download various forms to process their taxes. Users can also check the validity of vehicle registration certificates on the OBR's website, as well as the validity of their tax ID number.

Table 5.2: Overview of key public platforms in Burundi

| Platform | Sector | Type | Piloted by | Strengths | Weaknesses |
|---|---|---|---|---|---|
| SIGEFI | PFM | G2G | Ministry of Finances | ▪ Improves budget monitoring and internal controls | • Staff lack capacity on how to support maintenance / integration<br>• Limited integration with other MDAs |
| OPEN-PRH | HRM | G2G | Ministries of Finances and Civil Service | • Collaboration between public agencies and banks<br>• Helps improved HRM and control of wage bill.<br>• Helps detect "ghost" workers | • Not all modules are operational<br>• No mobile application available, enabling access |
| ASYCUDA WORLD | Customs | G2G | Burundi Revenue Authority | • Fast customs clearance<br>• Leverages shared connectivity network<br>• Front-facing portal, with some on-demand services available to users | • No mobile application available, enabling access<br>• Inadequacy and obsolete electric and computer equipment<br>• Dedicated data center needs to be renovated to meet international standards |
| GUE | Customs | G2B & G2C | | | |
| SIGTAS | Tax | G2B/ G2C | | | |
| GUP | ID | G2G/ G2C | Ministry of Public | • Support decentralized access of public services | • Heavy reliance on donor funding |

[62] https://www.bi.undp.org/content/burundi/fr/home/presscenter/articles/2015/02/10/des-guichets-uniques-provinciaux-pour-construire-une-administration-proche-des-citoyens.html

[63] Molefe L., Khan S. and Isingoma M. (2018). Tax Administration Diagnostic Assessment Tool. African Tax Administration Forum.

| Platform | Sector | Type | Piloted by | Strengths | Weaknesses |
|---|---|---|---|---|---|
| | | | services/ Ministry of Security | • Interoperability: system leverages shared data infrastructure (between three agencies) | • Inadequate resources for full GUP operationalization |
| DHIS2 & OPENCLINIC | Health | G2G | Ministry of Public Health | • Easy and unified management of patients' files<br>• Dashboard with integrated data | • Weak ownership by line ministry<br>• Weak local capacity for management of the system |
| EMIS | Education | G2G | Ministry of Education | • Provides unified database of schools | - Out-of-date |
| ISOKO.BI | Administrative services | G2C | Ministry of Public services | • Multilingual one-stop-shop platform, with frequent updates<br>• Some degree of interaction with citizens | • The website is still primarily a one-way informational digital platform<br>• Unfinished/ongoing |
| Investburundi.bi | Business creation | G2B | Ministry in charge of Good Governance | • Website with the largest audience providing comprehensive information on creating a business, with some downloadable forms.<br>• Easy navigation compared to other government websites | • The website is still a one-way digital platform<br>• Not multilingual: it lacks national language (Kirundi) section |
| IMIS Burundi | Open data | G2C/ G2C | ISTEEBU | • Open and interactive | • Lack of outreach and use<br>• Outdated data |

**Several MDAs have also started to leverage digital payment platforms as a means of enabling digital services delivery.** Moving forward, new digital financial services, particularly available payments platforms, will need to be leveraged to support the end-to-end digitization of public services, by enabling broader use of online payments for services. The latest available data from 2014 shows that only three percent of Burundians received payments from the Government, half of which concern salaries paid to civil servants. However, stakeholder consultations suggest that both uptake of mobile money, and use of digital payments platforms by government has since increased. Several solutions were released in recent years, which have contributed to the mainstreaming of Government-to-Person (G2P) and Person-to-Government (P2G) payments for public utilities, tax and social transfers, including safety nets and subsidy schemes. While there is ample scope for further scaling (discussed further in Chapter 6) further digitization and consolidation of key databases and registries will be needed to facilitate this – e.g. a more robust foundational ID and integrated social registry systems for safety nets payments.

Overall, developing more transactional services will require further investment in shared enabling infrastructure and services, including enabling platforms such as a robust ID system, which help improve interoperability. These issues are discussed further below

#### 5.2.1.4 *CivicTech and Open Data*

**CivicTech, including data-sharing portals and digital services that aggregate public feedback and monitor service quality can improve the quality of public participation, accountability and oversight, and foster greater government responsiveness.** By providing a new channel through which people can

**Box 11: The role of public e-services in boosting resilience in the face of pandemics**

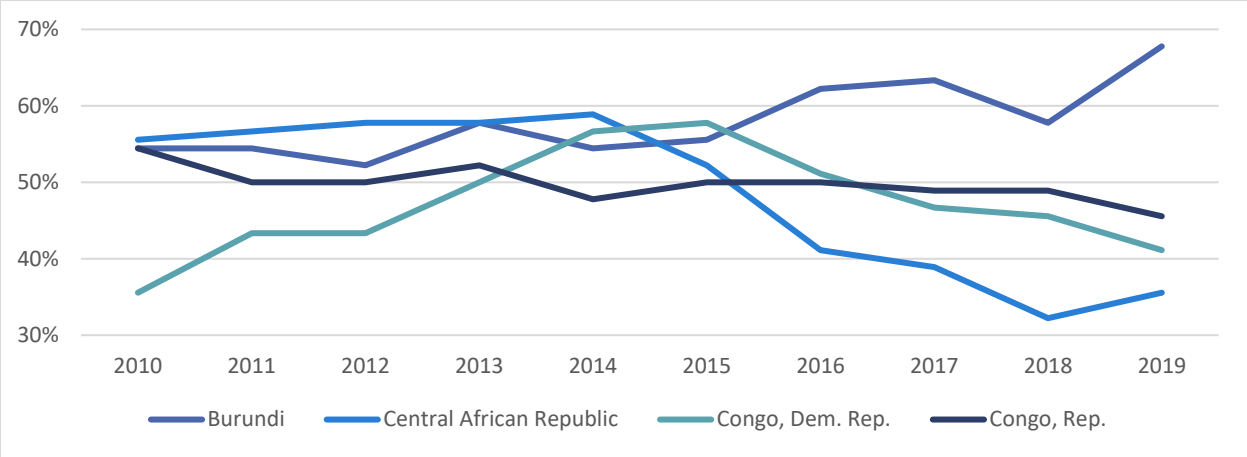
**The recent COVID-19 outbreak has illustrated the importance of developing more robust e-government capabilities** that can ensure continued delivery of critical services in the face of restrictions on movement and physical contact. In this sense, the on-going emergency has demonstrated that Burundi is still poorly equipped to offer such services, even in the health sector where substantial progress has been made on back-end systems.

obtain information, voice concerns, and interact with their governments, these technologies can help strengthen trust and reinforce the social contract between Government and citizens. As discussed, MDAs mostly use their websites for one-way communication and information-sharing.

**Few, if any, consultations are conducted online to inform decision-making and improve service delivery.** The Isôko platform has developed a survey module, as of June 2020, it has not yet been deployed, users are only able to leave comments on the website. Some MDAs have started using social media to engage with their beneficiaries, however with low levels of social media usage – 4.5 percent – Government is unlikely to reach a vast online audience. Local uptake of social media is discussed further below.

**While Burundi's Institute of Statistics and Economic Research (ISTEEBU), has launched a nascent open data initiative, the country lacks a coherent policy, legal and governance framework to enable a vibrant open data ecosystem.** As noted above, initiatives that aim to maximize the amount of information available online exist, but the Government does not have a published policy on open data that is based on international practices. Burundi is also the only East African Community (EAC) country that does not have a specific law on access to information, moreover, there are no specific laws on government data archiving and preservation. The Statistical Law of 2007 did confer the role of centralizing and preserving all the statistical data placed within Ministries, Departments, Agencies (MDAs) and public and parastatal enterprises, with the Burundi's Institute of Statistics and Economic Research (ISTEEBU). With donor support, ISTEEBU has engaged in capacity building activities for its staff, developed its second National Strategy for Statistical Development and improved its connectivity enabling ISTEEBU to disseminate some data on its website. Burundi thus made significant progress in the WB's Statistical Capacity Score indicator, as evidenced by Figure 5.2 below.[64] A lack of digital data, collected, shared and centrally stored with government continues to hamper the existing Open Data initiative.

Figure 5.2: Evolution of the Statistical Capacity Score in Central Africa




Source: World Bank

**In 2017, the open data platform, IMIS Burundi[65], was developed by ISTEEBU – yet its use remains limited.** The platform is presented as "an integrated system for managing socio-demographic and economic data" with the objective "to provide users with a national, reliable database, allowing, among other things, the generation of relevant indicators" and to "centralize, merge, process and render information in real-time." However, the use of the platform remains limited, partly due to limited knowledge of its existence among key contributors and user-groups, but also due to the quality of the data available. Further efforts are needed to improve the quality, reliability and regularity of the data

[64] The Statistical Capacity Score can be interpreted as a proxy for a country's capacity to implement Open Data policies. See https://opendatawatch.com/blog/indexes-of-data-quality-and-openness/
[65] http://imisbdi.bi/binbdi/RpWebEngine.exe/Portal?

being produced, as well as ensuring that said data is made available in standardized, machine-readable formats. This will require stronger institutional and policy coordination (e.g. open data focus points in key MDAs). In sum, there is still ample scope to harness open data for improved policy making and to promote access to information that can support innovation on the private sector side, which is discussed further in Chapter 2.

**Burundi thus still has a very long way to go in terms of creating a vibrant and enabling data ecosystem, which can harness the power of big data, or AI.** Developing Open Data policies is a useful first step in encouraging innovation in collaboration with citizens and businesses.

### 5.2.2 Connecting government

#### 5.2.2.1 *Use of shared infrastructure*

**Progress has been made in connecting disparate MDA via the "COMGOV" network, which provides government with broadband.** The project was launched in 2013 and is implemented by BBS. The advance bulk purchase of wholesale capacity from BBS was financed by the WB RCIP-2 project. 60 different MDAs are provided with 100Mbps of IP-internet and 440 Mbps of national transmission bandwidth via a shared network. Nevertheless, many MDAs still lack adequate access to broadband, particularly local government.

**There are no shared data hosting solutions being leveraged.** Government lacks a shared cloud and no shared government data center exists. Instead, many choose to leverage their own servers and data centers, making intra-government data exchange difficult. For example, the Burundi Revenue Office (OBR), the Central Bank and the Presidency all have their own data centers. The Burundi Backbone System (BBS) is currently home to a national data center, which many other public agencies leverage to backup their systems. While the IFMIS systems was developed using a cloud-based solution for data hosting, the cloud is not used by other MDAs, and weak ability to connect to the system, particularly locally, is severely limiting its impact.

Re-using and sharing data effectively, through shared data hosting, will be key to developing more integrated e-service capacity.

#### 5.2.2.2 *Interoperability layers and shared services*

**As noted above, there is limited interoperability between systems, and weak use of shared services.** Interoperability layers and shared services generally help to facilitate secure data transfer, storage and exchange, leveraging common resources across disparate hardware devices, communication networks, cloud providers, operating systems, applications, and interfaces. Shared services and interoperable systems can thus reduce the administrative burden experienced by citizens and businesses, but also facilitate the work of civil servants themselves. These systems improve real-time information sharing across institutions, while also enabling the principle of "ask-once" data policies, where government never requests information more than once from its constituents. Interoperability layers and shared services are thus key to supporting service integration and greater resource efficiency. This would allow the government to reduce the duplication of resources across agencies, streamline and automate business processes and leverage economies of scale. The failure to adopt a whole-of-government approach to the e-government program in Burundi is partially to blame for a lack of shared systems, services and gaps in shared infrastructure. Other factors contributing to weak interoperability are explored in Table 5.3.

Table 5.3: Challenges to achieving interoperability

| | |
|---|---|
| Organizational | • Lack of a single centralized agency coordinating and managing the implementation of ICT projects for all ministries and public agencies<br>• Lack of enforcement of the Ministry of ICT and the Regulator's policies and guidelines<br>• Resistance and reluctance to change to new processes and data management due to the fear of loss of control by administrative officials<br>• Lack of additional budget allocation to introduce new activities outside the conventional program |
| Semantic | • Heterogeneity of information systems, operating systems and hardware<br>• Legacy systems<br>• No standard formats for data archiving and exchange |
| Technical | • Non-availability of ICT infrastructure at the data/component/service level<br>• Legacy systems, process and data with disparate technology<br>• Many public agencies have developed their own websites in silos |

**Some systems have attempted to leverage shared infrastructure between a network of MDA, but these systems only help form pockets of interoperability, not across government.** The Guichet Unique Provincial (GUP) relies on a connectivity network shared between several agencies (including Air, Borders and Foreigners Police and the Judicial Police) to deliver biometric documents. Similarly, in the tax and customs sectors, a shared connectivity network is leveraged, allowing Customs and Tax offices to view information on a taxpayer in a unified and integrated manner.

#### 5.2.2.3 *ID & Trust Services*

**Burundi currently lacks trust services such as a foundational digitally enabled identification system and electronic certificates, critical to facilitating secure online transactions.** Trust in a person or an entity's identity is a cornerstone of economic and social transactions. The emergence of the digital economy has created a need for verifiable digital identity credentials. Digital ID systems facilitate the secure identification and authentication of a person, entity or device - both in person and/or online - and bind the user of an online transaction with their "real world" or legal identity. Combined with digital certificate services (e.g. public-key infrastructure (PKI), they are also the basis for e-signatures, which enable acknowledgement, approval, acceptance, or obligation to be indicated without physical presence. Developing these services is critical to supporting growth in digital transactions.

**The national ID system in Burundi continues to be paper-based.** While IDs are issued to citizens 16 and older by the Ministry of Interior, in the absence of centralized digital foundational database the present system fails to issue unique ID numbers, In 2013, the country launched a pilot project to issue biometric and machine-readable national ID smartcards, but the project was never rolled-out nationwide and was later cancelled. The piloted card contained the cardholder's name, sex, date of birth, province, commune, address, parents' names, children's names, bank account, signature, education, marital status, medical assistance information, fingerprint, and blood group.[66] The national ID smartcard would cost 6,000 BIF (about 3 dollars USD). Registrations for the new ID card started in Bujumbura and a nationwide rollout was planned for 2017, however, the 2015 crisis interrupted roll-out. The Ministry of Interior awarded the contract to produce the national ID smartcards to an Indian firm, but following the crisis was suspended due to a lack of funds. Consultations suggest that the project was ill-conceived, failed to include key stakeholder and align with global best practice.[67]

[66] Esquivel Korsiak, V.; Mittal, A. (2018). Study of Options for Mutual Recognition of National IDs in the East African Community. Identification for Development. Washington, DC: World Bank Group. Any new attempt to roll-out a foundational digital ID system will need to be informed by global best practice, given the many cases where ID system have been badly procured, resulting in vendor lock-in and other issues limiting its utility.
[67] OLUCOME (2019). Rapport annuel d'activités de l'OLUCOME de 2018.

**However, digitally enabled driving licenses and passports are available**. The Ministry of Public Security has been issuing biometric driving licenses since 2016, and East African Community passport with biometric technology since 2018. Obtaining these documents requires applicants to be physically present at the relevant offices for fingerprints and, up until 2017, these documents could only be obtained in Bujumbura, which severely hampered access. As noted above, these documents can now be obtained locally in 10 more provinces.

**There is no CERT or SOC currently in place to detect and respond to possible threats.** However, a CERT is currently being established, hosted by the telecom's regulator, which still needs to be equipped and would benefit from further technical assistance.

### 5.2.1 Constraints facing the development of Public Digital Platforms

**Limited infrastructure and connectivity:** As discussed in Chapter 3, access to the internet (both fixed and mobile) remains a major constraint to enabling citizens' access public digital platforms. The issue is especially challenging outside of Bujumbura. Even government offices suffer from connectivity issues, especially at the subnational level. Many municipalities and local government offices have weak access to connectivity (with some notable exceptions like OBR office) – and will likely prevent the effective decentralization of e-service delivery. About 20 percent of civil servants are estimated to have computers, but no full inventory exists.

**Lack of institutional coordination and whole-of-government approach**: While some institutions have been given a mandate to support the implementation of ICT projects and the development of digital platforms, little coordination is taking place in practice. Sectoral agencies are implementing projects without involving SETIC, which is severely impacting the quality and effectiveness of these initiatives and thus limits opportunities to development interoperable and cost-effective systems.

**A scant legal and policy framework**: Digital platforms require strong legal and regulatory environments, standards and frameworks, privacy- and security-enhancing design measures. However, Burundi has no regulations in place for data protection and security, the archiving and preservation of digital data and the ownership and licensing of government data, nor has it developed policies for open data and access to public information and to ensure interoperability between government systems and databases. The Ministry in charge of ICT has developed a law on electronic communications and transactions that would significantly impact the development of private digital platforms, but as of March 2020 has not been adopted.

**Insufficient government capacity for maintenance and sustainability and lack of digital literacy among citizens:** As noted in the proceeding chapter, both a digitally competent workforce and digitally literate citizens are needed to sustain a digital economy. MDAs in Burundi largely lack the capacity to properly sustain their back-office and service delivery platforms without external support while large segments of the population lack the means and skills to meaningfully engage with and reap benefits from such platforms. There is both a continuum and a mix of digital skills required to support the emergence and sustenance of a digital economy, and in Burundi, there is a need for those already in and coming into government to have at least an intermediate[68] level of proficiency with digital skills, and for the majority of the population to develop foundational proficiency[69] to enable access to related services.

**Lack of involvement of citizens in the design and use of public digital platforms**: The development of public digital platforms in Burundi remains largely guided by the need to provide information to users, and has not yet shifted to the need and potential of providing citizens with ways to systematically provide feedback for improved design and service delivery. Most G2C platforms consist of

[68] Defined as being able to "independently deal with well-defined routine and nonroutine problems that involve understanding contents." UNESCO Digital Literacy Global Framework.
[69] Defined as being able to "with guidance, deal with simple tasks that involve remembering contents and instructions." UNESCO Digital Literacy Global Framework.

informational websites and the rare service delivery platforms have also been developed without the input of potential users to ensure ease of use and uptake.

**Funding and donor coordination:** Burundi has historically relied heavily on external and donor funding, much of which was suspended following the 2015 crisis, interrupting progress on a handful of e-government initiatives. Funding needs remain high as well, alongside donor support to implement initiatives, which also raises issues of sustainability. However, heavy reliance on donor funding in this area, also raised issues around effectivity coordination. Donors needs to ensure that vertical initiatives piloted are aligned with wider efforts to boost interoperability.

### Box 12: Cross-border cooperation on digital platforms

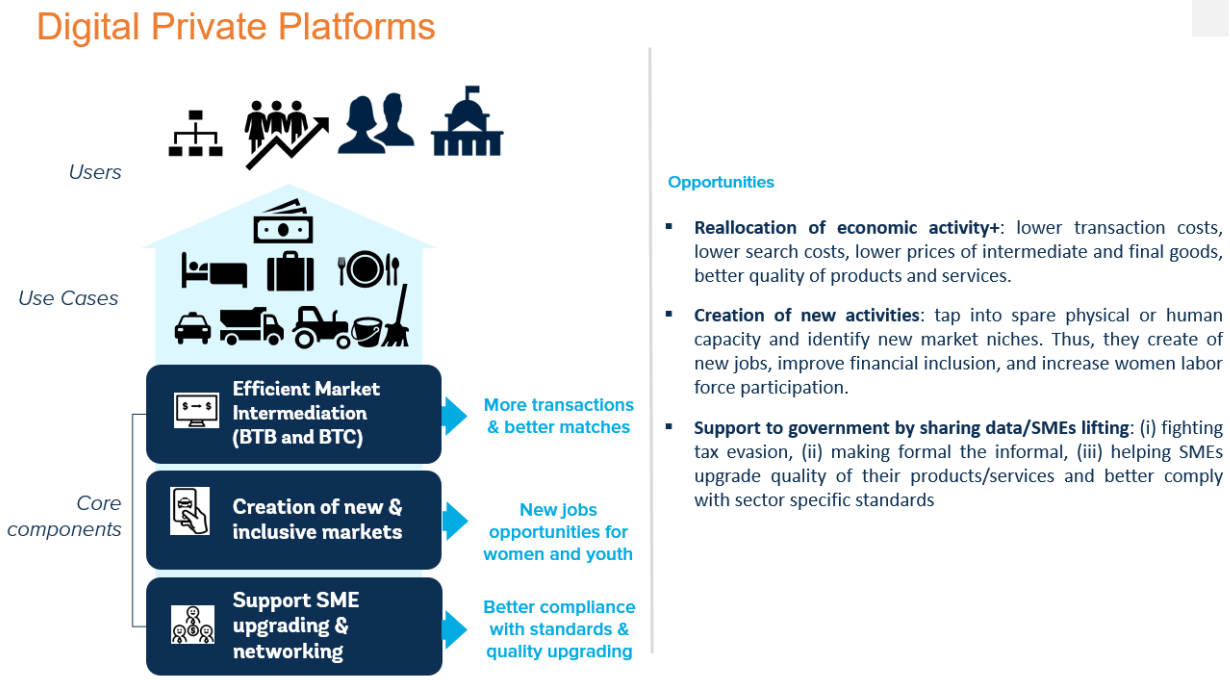
**Legislation and standardization**: The East African Community (EAC) has adopted a modern and effective regional harmonized framework for cyberlaws. Burundi should build on that to develop its legislation and could also use the existing laws of EAC member States on access to information as a blueprint. In addition, partner states are cooperating to establish ICT infrastructure as well as for the development and deployment of standardized technologies and services.

**Integration**: The EAC has developed a few integrated platforms aimed at facilitating trade among member countries and providing useful information to support the businesses, health services and overall development in the region. The Trade Information Portal comes in support to one-stop border shops that have been recently set up and are strengthening cross-border trade.

**Skills**: Under the EAC objective to develop a harmonized educational approach to address regional needs, there is an opportunity for Burundi to avail itself of technological research and tools from more advanced countries, and train its people in the skills needed to foster platforms development and meet the demands of the Digital economy

## Private Sector Platforms

Figure 5.4: Digital private platforms: Core components and opportunities




Source: World Bank DE4A

**In 2018, Burundi ranked 147 out of 151 in the UNCTAD B2C E-commerce Index.** The development of a vibrant platforms ecosystems on the private sector side, capable of improving market access, faces stark demand-side constraints. Low internet uptake, compounded by a low electricity access rate ( 7 percent) and low GNI per capita ($280 in 2018), yield low demand for services offered online.[70] While internet and mobile phone penetration have increased, private sector platforms including e-commerce are still in their infancy. And while, a series of e-commerce platforms have been launched, many have failed to survive, given the challenging market conditions faced. Attempts to foster a more vibrant e-commerce industry in Burundi, thus starts with increasing the number of consumers online.

### 5.2.2 Uptake of digital platforms among MSMEs

**Digital platform usage among MSMEs remains very low and is mainly limited to mobile payments platforms.** The vast majority of MSMEs surveyed as part of the diagnostic do use digital payments services to either transfer money or receive payments for goods and services provided. The use of digital platforms such as e-commerce, however, remains very low. Many of the MSMEs surveyed had little comprehension of what e-commerce platforms have to offer. Any effort to spearhead growth in e-commerce will require sensitizing users on the potential for reaching new consumers, increasing digital skills and boosting the ICT adoption capacity of MSMEs in Burundi.

**MSMEs that have attempted to create digital platforms have not been successful to date.** These have had little success and payment service providers have shown limited interest in working with MSMEs. As a result, telecom operators, banks and payment service providers (PSPs) prefer to offer services to larger clients such as Regideso, Burundi's national utility company.[71]

### 5.2.3 Use of social media

**The World Economic Forum (WEF) ranked Burundi last out of 139 countries for the use of virtual social networks in 2016.** Facebook remains one of the most used social media platforms in Burundi, but uptake only at mere 4.6 percent (Table 5.5), reflecting the low use of data services overall. In the past, social media has been subject to shut down and censorship in Burundi according to the Open Observatory of Network Interference.[72] The use of the professional social network LinkedIn is one of the lowest in sub-Saharan Africa, with only 0.4 percent of the population registered on the network.

Table 5.5: Use of social media in March 2020

| Social media | Burundi | SSA |
|---|---|---|
| Share of Facebook users per inhabitant | 4.5% | 16.2% |
| Share of LinkedIn users per inhabitant | 0.4% | 3.8% |

Source: Facebook and LinkedIn marketing API, compiled by NapoleonCat.com

### 5.2.4 State of the Domestic E-Commerce Industry

**In Burundi, the small market size and concentration of economic activity in Bujumbura has created an environment where entrepreneurs rely on a brick-and-mortar business rather than adding an online dimension to their services.** Between 2017 and 2019, E-soko was Burundi's largest online ecommerce platform before its demise. E-soko, along with other smaller local e-commerce platforms that launched in 2017 and 2018 such as Burundiship and Kugasoko, all shut down in 2019 due to market failures discussed further in Section 5.2.6 below.

**Despite these market challenges, e-commerce has high growth potential in Burundi.** As noted in Chapter 4, a growing userbase and Burundi's large youth population are clear assets to engage further in the development of e-commerce platforms. While, familiarity with mobile money remains low, and there is ample opportunity to meet consumers' needs through products such as mobile credit, mobile

[70] WBG World Development Indicators.
[71] The PSP PayWay recently entered into an agreement with Regideso to enable the payment of utilities using mobile solutions.
[72] https://ooni.org/post/2020-burundi-blocks-social-media-amid-election/

money transfer and payments, which can then spark economic growth and ensure the feasibility of e-commerce models.

**The limited number of tech hubs has been a factor in the slow growth of home-grown, innovative platforms entering the market.** As discussed in Chapter 7, Burundi's only tech hub, BujaHub, has largely contributed to the small number of innovative platforms and startups which are slowly on the rise.

**Finally, the use of agricultural digital platforms can significantly reduce the costs associated with market access and decision making for Burundi's farmer population.** Around 90 percent of Burundi's population are small holder farmers, who can benefit from such solutions. Digital platforms in agriculture can significantly reduce the costs associated with linking small scale farmers with buyers. They can improve information symmetry between farmers and middlemen, helping farmers make more informed decisions on resource management, thus making small-scale producers more productive and competitive.

### 5.2.5 Constraints facing the development of Commercial Digital platforms

**Nascent e-commerce companies in Burundi have faced significant growth challenges, in part due to last-mile logistics, a culture of face-to-face transactions, and low transaction volumes**. This has led to most e-commerce ventures closing down after a few years of operations. Most constraints faced in the development of digital platforms echo the demand-side constraints discussed in Section 3.2.4, showing that there is a vicious cycle between the low demand, lack of skills and production of digital content, and slow growing enabling infrastructure that hampers the development of digital solutions. This is further constrained by the lack of regulatory framework on cybersecurity and inexistence of trust services such as digital ID and electronic certificates, which significantly reduce the perception of potential benefits availed from digital transformation.

**Low purchasing power remains a key constraint despite the growth in mobile penetration.** When considering the cost of an entry-level mobile-cellular plan in relation to the generalized average income of the population, Burundi ranked 193 out of 196 countries on unaffordability of mobile services.[73] Thus, price remains an obstacle for further mobile-cellular adoption in the majority rural population.

**User awareness and confidence in digital platform transactions remains very low, particularly for e-commerce.** E-commerce CEOs surveyed indicated that consumers have little confidence in purchasing products online. The vast majority of users did not trust the digital platform process and CEOs noted that while websites had relatively high views, the conversion rate from viewing page to actual purchases was less than 0.1 percent[74]. The few sales recorded were primarily B2C transactions where the end user was already familiar with the retail shop that posted the product on the platform.

**There is a lack of collaboration between major telecom providers and digital entrepreneurs, hampering the implementation of digital platforms and online payments services.** According to consultations with e-commerce CEOs, the major telecom providers refused to work with their respective platforms to facilitate online payments. One of the reasons cited in particular was that telecom providers did not trust their own cybersecurity systems, and thus viewed sharing part of their online payment interface very risky, fearing potential exposure to cyberattacks on their respective companywide interfaces. Indeed, Burundi currently does not have any policy or standards around cybersecurity, and businesses cannot confirm that they meet requisite levels of safety in their electronic transactions.

**The prohibitive costs of logistics and transport in Burundi has adversely impacted MSMEs engaging in e-commerce services and push up prices for consumers, further deterring them from engaging in e-commerce**. Many local SMEs and start-ups are thus denied the opportunity to scale up their activities through digital solutions. However, even larger companies are affected by the low volumes of order

[73] Global ICT prices, International Telecommunication Union (ITU), www.itu.int
[74] Interview with leading digital firms E-Soko, InterImmo, Jumia Burundi.

and delivery, which reduce their ability to capitalize on economies of scale. While scale enables the digital platform models to function, transport infrastructure does not enable them to reach a critical scale of operations.[75] Moreover, many e-commerce traders have noted that the shipping costs often supersede the value of the products, reducing the value proposition for customers.

**Many Burundians remain hesitant to buy goods and services online, especially from unknown, small vendors.** Most online sales are usually B2C from vendors that the consumers are already familiar with. with poor reverse logistics and returns policies discouraging commerce. Consequently, Burundians typically insist on payment post-delivery to determine that products are delivered, as advertised, which adds to the logistics costs and poses a financial challenge for SMEs that complete the order, but also reduces the scope of developing digital financial services (DFS).[76]

## 5.3 Recommendations & Next Steps

Both the challenges faced by Burundi in the development of digital platforms, and proposed solutions, remain at the foundational level, with many prerequisites still needed to be in place. Digital public service delivery is only nascent, and content is mostly informational. The SETIC, which should be in charge of accompanying these efforts across all services of the Government, lacks the capacity to act as a leader of digital transformation. The lack of a centralized digital ID system hampers the development of both public and private platforms and compromises the safety of electronic transactions.

Table 5.6: SWOT analysis on digital platforms

| Strengths | Weaknesses |
|---|---|
| • **Digital transformation is happening** in the health sector, but there are **no systematic efforts to digitalize government operations**<br>• The **COMGOV network** operated by BBS provides broadband across MDAs, but **systems still operate in silos**<br>• **Several G2G platforms are already in use** in the public financial and human resources functions; but these are **not integrated** and offer **only the most basic features**<br>• **Some G2C systems exist** (Isôko for public service delivery, IMIS for open data), but their **capabilities should be scaled up** as they lack interactive and transactional content and information is not always up-to-date | • Most government platforms are only informational, not transactional<br>• There is **no integrated e-government strategy** for the various ongoing efforts, which hinders their effectiveness<br>• Existing **capacities are scattered across MDAs** – the lack of institutional coordination prevents a whole-of-government approach<br>• **No comprehensive regulatory framework** for data governance and cybersecurity standards<br>• No dedicated e-government strategy / shared services/ interoperability<br>• The **lack of digital ID is a strong deterrent** to the **use of shared services**, **interoperable** and **transactional platforms** |

[75] McKinsey Global Institute (2013). Lions Go Digital: The Internet's Transformative Potential in Africa,
[76] Lack of trust and familiarity with online payment methods is also a contributory factor for the consumers preferring to pay on delivery.

| Opportunities | Threats |
|---|---|
| • There are **institutions in place at various levels** to oversee the Government's digital transformation strategy, providing a good momentum to build capacity of these actors<br>• **Some MDAs have begun to leverage platforms** as a means of enabling service delivery, including opportunities to develop G2P payments<br>• **Availability of fiber-based broadband** in urban areas has enabled the sector to develop | • The **high costs associated with digital goods and services** hamper the sustainability of both public and private sector platforms<br>• **Low quality of connectivity**, with speeds up to 2G which are not fast enough to process advanced data-driven digital platforms<br>• The **slow development of digital financial services** hampers the development of platform solutions |

**The following recommendations could support the development of digital platforms in Burundi:**

## Objective 1: Improve the legal, policy and regulatory environment for digital platforms

**R1. Develop a separate, user-driven and costed e-Government Strategy with prioritized objectives.** Burundi is currently relying on its National ICT development policy to guide e-Government efforts and develop public digital platforms. The country would however gain from developing a separate and focused e-Government Strategy that is guided by users' needs and identifies and prioritizes platforms to be strengthened and developed. That prioritization could be informed by criteria such as beneficiaries' (both government and citizens) needs and the potential for significant impact on people's lives, cost-benefit analysis given limited resources, and likelihood of implementation. The estimation of the costs to implement and sustain the priority initiatives and the determination of potential sources of funding would be an integral part of making such a Strategy operational.

**R2. Align with and build on the legal and policy regime of the East African Community regarding the data governance, e-Government, competition and intellectual property.** The EAC has developed a modern regional harmonized framework for cyberlaws for e-Government and e-Commerce which focus on electronic transactions, electronic signature and authentication, data protection and privacy, consumer protection and computer crime. All member countries have committed to enacting this framework, and Burundi should build on this. Although the country has been an active participant in the years-long process of developing such a harmonized framework, it lags behind other countries in the region in terms of legislation development and adoption. On access to information, Burundi could use the existing laws of EAC member states as a blueprint, while remaining cognizant of the gaps that exist in those laws so they can be addressed.

**R3. In the short term, develop a decree with the main purpose of creating an authority body responsible for setting up and managing the Burundian National Identification System.** In the short term, the prerogatives of this Authority need to be identified. In the medium term, a comprehensive law covering in a comprehensive manner all aspects related to the establishment of the National Burundian Identification System needs to be drafted. The term authority is used to designate the entity that will oversee setting up and managing the Burundian National Identification System. The selection of this entity's legal form ,and the body to which it would be attached is the responsibility of the Presidency of the Republic.

## Objective 2: Strengthen key stakeholders in the governance of digital transformation

**R4. Strengthen and enforce the mandate of SETIC and institutional coordination for implementation.** Enforce the mandate of the ministry in charge of ICT and SETIC in particular with regard to coordinating and overseeing the implementation of major ICT projects. That mandate should be reaffirmed and communicated to the MDAs from the highest levels of government, as well as the involvement of SETIC made a condition for financing the implementation of such projects from the design phase. Strengthened coordination would also promote the pooling of already limited resources among MDAs and reduce the duplication of resources while allowing to tackle issues of interoperability and interconnectivity upstream. In addition and in parallel, SETIC's capacity to carry out its mandate (staffing, funding, technical expertise) needs to be strengthened.

**R5. Promote capacity transfers from the international and regional private sector and mobilize line managers.** As we have seen, the development and management of digital public platforms in Burundi has been mostly financed through donor funding and implemented by international entities with little transfers of capacity. The GoB can play an important role in fostering links between multinational and regional companies and the domestic private sector, to facilitate technology development and transfer of knowledge and skills; as well as embed such capacity transfer programs in government initiatives for the maintenance and sustainability of digital public platforms.

- At the minimum, government officials should be expected and trained to acquire intermediate levels of digital proficiency. Burundi can avail itself the expertise, training and tools available from more advanced countries notably under the cooperation with the EAC.
- At the levels of the MDAs, the involvement of line managers is insufficient, and many government officials underestimate the extent of changes that will be required for to implement effective and operational digital platforms. Early and effective involvement of those managers, including at the local levels, with the related training is important.

**R6. Promote digital literacy and a citizen-centric approach to design and implementation.** Existing digital platforms, which in their majority consist of websites or back-office systems, should allow users to provide feedback and download their relevant forms and documents. Consultation and feedback mechanisms to involve users upstream in the design of platforms aimed at service delivery especially (G2G, G2B, G2C) should be pursued in order to prioritize services needing digitization, especially in the operationalization of high-stake initiatives (such as in taxation). They should ideally be iterative to encourage user friendly designs and improvements in the services offered and could be as simple as online feedback forms for users. Investments in basic digital literacy training will be important, but also in more advanced skills to become digital creators, focusing especially on the youth and women to close the digital gaps. The government should explore partnerships with the private sector and NGOs, especially those already operating in that realm, to scale up initiatives. All these initiatives would also help increase the overall low levels of public digital platforms' uptake.

**R7. Set up incentives structure that encourage the country's telecom operators to engage with MSMEs and digital platform stakeholders.** The Government can encourage local sourcing through moderate financial tax incentives and support the organization of professional networks with tech startups, CSOs and digital incubators in the country and at the EAC level. It will be important to assess the cost/benefit equation of any incentive structures, in order to ensure their viability.

## Objective 3: Build the technical standards and foundations for digital platforms

**R8. Invest in interconnectivity.** Lack of interconnectivity between relevant MDAs and even the ability among government offices of the same institutions to access a given platform from their respective locations, remains a major foundational obstacle to the development of effective, efficient, integrated

and interoperable public digital platforms that needs to be addressed. This would require investments in reliable internet access at central and decentralized levels of government, and a continued deployment of efficient network infrastructure to interconnect government offices. BBS has much contributed to this objective through their support of a national fiber optic network build-out, deployment of the COMGOV network, and the interconnection of several government agencies and offices. However more investments will be needed, notably the support of international and regional donors and partners.

**R9. Develop technical standards for data management and interoperability frameworks.** Few of the public sector applications and platforms developed can interact or interoperate with one another even when there are clear benefits; there is a proliferation of incompatible systems and infrastructure among MDAs. To enhance coherence and facilitate the exchange of information, technical and regulatory standards are needed for data management, processing and protection (including formats for data exchanges and archiving) and interoperability frameworks defined to converge relevant digital platforms (for example, the current HR MIS would gain from being interoperable with the line ministries' HR systems) as well as with relevant third parties. For example, the revenue administration authority being able to have automated links not just with commercial banks but telecoms and utilities companies to verify taxpayer information.

**R10. Secure resources for the implementation of digital ID systems.** Efforts to develop safe and secure digital ID systems and can allow users' identity verification are important in fostering trust in the transactions undertaken both in person and online. Burundi's undertakings in this realm and specifically in digitizing the most used and available form of ID in the country, the national ID (a priority under the PNDTIC policy of building and effective and efficient government) have been stalled due to lack of funding. Given its immediate potential in facilitating transactions in both the public and private sectors domains, and in the longer term doing business, and as Burundi further ensures its future digital economy, the country should resume and secure funding for those efforts. In this process, the country can learn from its neighbor Rwanda, which has developed one of the strongest foundational national ID systems in Africa.

**R11. Prioritize the development of a digital identity and electronic signatures ecosystem – with the aim of rolling-out a system that is aligned with global best practice and recognized regionally.** A trusted and inclusive digital ID system would accelerate growth in Burundi's digital economy by enabling citizens and residents to undertake trusted transactions online, allowing more services to be digitized. Furthermore, if recognized across borders, particularly in its current East Africa Region, such a digital identity system will boost the competitiveness of Burundi in regional and global digital trade. For example, registering businesses or entering contracts in other countries without needing to be physically present. As part of this process Government is encouraged to review its approach to the national ID system. Specific recommendations include:

- First develop a clear and detailed policy and strategy, which will provide clarity on the purposes and features of the ID system. Importantly, this should be informed by comprehensive consultations with the public, civil society and experts
- Introduce an enabling law, based on said policy and strategy and a data protection law aligned with international best practices (more on this below).
- Adopt international best practices and norms in the design of the system (e.g. the ten Principles on Identification for Sustainable Development) - with a stronger emphasis on use cases, credentials and authentication.
- Address challenges with the overlapping institutional arrangements on identity, including between the National Registration Bureau and the Department of Civil registration.
- Play a leadership role and encourage dialogue on the reciprocal recognition of digital IDs in the East African region and African continent more broadly, including facilitating movement towards a single digital market. While Burundi has very limited experience it can significantly benefit from technical regional spill overs from more ICT advanced economies such as Kenya.

- Carry out a comprehensive information and education campaign to raise awareness and to proactively address public concerns in relation to national ID.

**R12. Improving the Cybersecurity Institutional Framework by reducing fragmentation, promoting clear mandates and building capacity of relevant agencies. Among priority recommendation are:**

- A refresh of the Cybersecurity Strategy and Policy and the amendment of the cybersecurity legislative framework.
- A consensus-based institutional and governance structure for cybersecurity across relevant MDAs.
- The formulation of National Guidelines for the Protection of Critical National Information Infrastructure.
- The development of compliance standards and compliance enforcement for cybersecurity across public, private and civil sectors.
- The formulation of a trust and transparency framework.
- Targeted capacity building in cybersecurity for specific audiences, including technical cybersecurity officials but also spanning managerial-level decision makers, non-technical end-users of government systems, police officers, judges and prosecutors and legislators.

# 6 Digital Financial Services

Key messages:

- **The provision of DFS is dominated by mobile money service providers in Burundi**, limited to a handful of services. Banks and MFIs have been slower to embrace digital channels.
- **Data gaps prevent a clear picture of the current state of digital financial inclusion in Burundi, including regional benchmarking.**
- **In 2017, the Bank of Burundi introduced a new banking law creating a formal licensing system for Payment Service Providers (PSP),** thus establishing an enabling environment for scaling up digital financial services (DFS).
- **Capacity building for both the public and private sector is essential in supporting further growth in DFS.** There is a strong interest in the potential of DFS, however know-how and resources are limiting factors.

## 6.1 Importance of Digital Financial Services

### 6.1.1 Socioeconomic Rationale for Digital Financial Services Development

**Digital financial services (DFS) include a broad range of financial products such as payments, credit, savings, remittances and insurance that can be accessed and delivered using digital channels** (like mobile phones, internet, ATMs, debit and credit cards, biometric devices, tablets, and any other digital or electronic system)**.** [77] DFS enables individuals, private businesses, and the government to access all these services without the need to visit a bank branch or deal directly with the financial service provider (FSP).[78] DFS typically leverages networks of third-party intermediaries and agents to foster accessibility and lower the cost of delivery. DFS providers are thus often able to offer wider service coverage than traditional brick-and-mortar FSPs.

**By leveraging technologies, such as mobile phone-enabled solutions, DFS can expand the delivery of basic financial services to Burundi's poor and underserved populations, helping to boost financial inclusion**, with positive ripple effects on employment, poverty reduction[79] as well as access to markets and services. The explosion of mobile money in SSA has been instrumental in expanding financial inclusion on the continent. Research shows that DFS allows countries to leapfrog, as they implement new payment technology, even when a large part of the population does not have access to traditional financial services.[80]

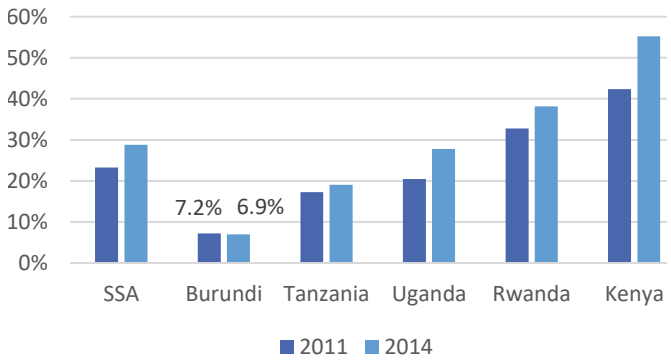
[77] IFC (2019). *The Case for Responsible Investing in Digital Financial Services.* EM Compass Note 67.
[78] (SNG & Partners, 2017)
[79] In 2016 research was conducted on the long-term impact of M-PESA on Kenyan households, which found that increased access to M-PESA agents significantly reduced both extreme poverty (income lower than US$1.25 per day) and general poverty (US$2). M-PESA availability was correlated with proximity of agents. Access to DFS was directly associated with lifting 194,000 Kenyan households, or 2 percent, out of extreme poverty.
[80] Gévaudan and Lederman (2020). *Stages of Development of Payment Systems: Leapfrogging across Countries and MENA's Place in the World.* Policy Research Working Paper 9104.

**Wider access to DFS can help strengthen the enabling environment for private sector growth as well as supporting public service expansion.** For example, Governments can leverage DFS to increase the efficiency and accountability in their payment stream, such as the disbursement of social transfers, receipt of tax payments, as well as routine payments for services from businesses and citizens. DFS can thus help to expand the delivery cash-based assistance to the poor.[81] This service delivery modality is particularly resonant in the face of COVID-19, where there is a need to support contactless transactions.

### 6.1.2 Alignment with Country Development Strategy & Goals

**Both the Government of Burundi and the Central Bank, the *Banque de la Republique du Burundi* (BRB) recognize the importance of expanding financial inclusion - yet fail to fully recognize the role that DFS can play in this regard.** In 2015, the Government issued a National Financial Inclusion Strategy, which sought to improve access to financial services in rural areas by supporting microfinance institutions (MFIs). The role of DFS in this strategy was limited to money transfers. Sadly, this strategy was never implemented, as its steering committee was under-resourced. In 2018, the BRB launched a second National Financial Inclusion Strategy; as part of this process, the BRB organized several workshops with central banks of other African nations to facilitate knowledge exchange on financial inclusion and related best practice. In this second strategy, the BRB identified two major bottlenecks in expanding financial inclusion in Burundi: (i) weak access to service points in rural areas, where a majority of the population continues to reside; more than half of existing access points found in Bujumbura; and (ii) a lack of awareness among consumers around to key financial products and services available (Figure 6.1).

Figure 6.1: Share of adults owning an account with a financial institution in 2011 and 2014




Source: Global Findex database

**Many of the strategic commitments made as part of the second National Financial Inclusion Strategy have failed to materialize.** A Financial Inclusion Unit was set up within the Supervision Department of the BRB, staffed with four people. The Unit has mainly been active in collecting data from FSPs (banks and non-banks) to track the state of financial inclusion. Theoretically, the Unit is also responsible for delivering capacity-building to FSPs in support of the creation of appropriate products and services targeting the financially excluded. However, the Unit appears ill-equipped to perform this task and would benefit from learning from the lessons of other countries, and understanding how these might apply to Burundi.

## 6.2 Diagnostic Findings: Current State of Digital Financial Services

### 6.2.1 Availability of Digital Financial Services

**Access to traditional financial services has largely been restricted to urban residents with formal employment.** According to the 2014 Global Findex figures, a mere 4 percent of adults were saving money using formal financial tools and services. Moreover, while some 60 percent of adults had borrowed money within the past year, only 2 percent had done so through formal channels.

[81] GSMA (2019). *Navigating the Shift to Digital Humanitarian Assistance: Lessons from the International Rescue Committee's Experience.*

#### 6.2.1.1 *Financial inclusion*

**The most recent data available from the Global Findex survey suggests that Burundi's levels of financial inclusion are among the lowest in SSA** – only prevailing over Central African Republic (CAR), Niger, and Guinea. Between 2011 and 2014, the number of adults with an account at a formal financial institution decreased from 7.2 to 6.9 percent (Figure 6.1). With only 4.1 percent of the population having made or received a digital payment in 2014, Burundi has one of the lowest levels of DFS usage on the continent (see Table 6.1).

Table 6.1: Key indicators of digital financial services

| Indicator | Burundi | SSA |
|---|---|---|
| Adults with a bank account, % (2014) | 6.9 | 28.8 |
| Adults with a mobile money account, % (2014) | 0.7 | 11.7 |
| Adults using digital payment, % (2014) | 4.1 | 22.7 |
| Agricultural payments made via digital channels, % of agricultural payments receivers (2014) | 2.9 | 11.3 |
| Domestic remittance sent or received via digital channels, % of total domestic remittance (2014) | 6.1 | 25.6 |

Source: WB Global Findex database. Note: Data from 2014 may not adequately reflect recent progress.

**However, recent incursions made by mobile money and in-country studies undertaken suggest that this may be changing.** A 2018 survey conducted by the World Bank shows that half of respondents surveyed had access to mobile money.[82] The survey reports a similar percentage for the use of digital payments.[83] These improvements can be attributed to the expansion in mobile money services and enabling regulatory reforms, alongside relaxing the provisions for mobile money services.

**Data from the BRB confirms that DFS access has been increasing significantly over the last few years**. As of March 2018, the BRB recorded 1.28 million digital payment transactions, placing Burundi on par with many of its regional peers. As of December 2019, financial inclusion levels were estimated to be around 20 percent, according to the Financial Inclusion Unit of the BRB.[84] By September 2019, there were some 4,034,628 recorded mobile money users, of which roughly 21 percent were thought to be active. Overall, some 1,803 mobile money merchants and 59,529 registered agents powered an annualized value of $308 USD million in 2019, representing ~9 percent of GDP. These figures are indicative of the growing role that DFS can play in accelerating service expansion and fueling economic growth.

#### 6.2.1.2 *Types of services offered*

**The provision of DFS is dominated by mobile money service providers in Burundi.** The mobile money market has been increasing since Lumicash entered the market in 2017. In the period that followed, the number of active mobile money users grew ten-fold.(see Figure 6.2). Lumicash is being offered by the MNO Lumitel, which has adopted an aggressive rural expansion strategy.

**There are currently three mobile money service providers in the country: Lumitel, Econet-Leo, and SmartCash.** Lumitel offers LumiCash, Econet Leo offer EcoCash, Smart offers SmartPesa and Onatel is looking to launch OnaCash. Of the three existing providers, Lumitel and Econet-Leo cater to 99 percent of the market. However, Lumitel market entrance was the catalyst for an explosion in DFS usage; competition in mobile money led to improved marketing and customer awareness, yielding a boost in mobile money adoption.

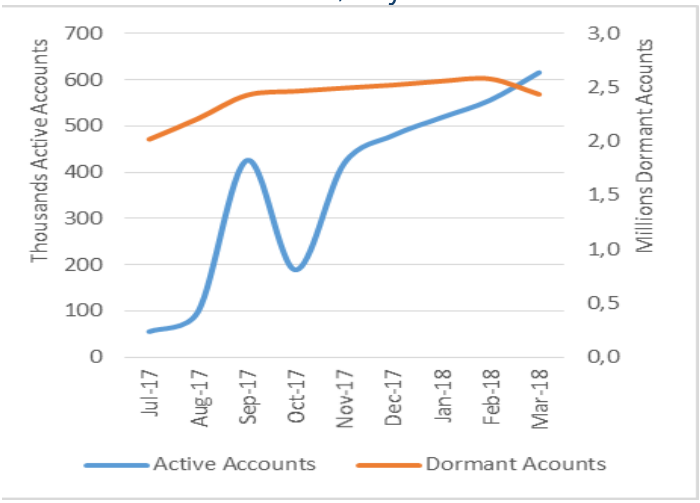
[82] World Bank (2019). *Driving Financial Inclusion in Burundi: State of financial intermediaries and inroad of mobile money.*

[83] It should be noted, however, that due to access and security restrictions, the results from the survey are not representative of Burundi's population and cannot be interpreted as a national estimate of DFS usage in Burundi.

[84] Conversations with the Financial Inclusion Unit during the week of 10-14 February 2020 in Bujumbura.

**At present, a limited range of mobile money services are being offered**, including simple person-to-person (P2P) transfers, Cash-In-Cash-Out (CICO) services, airtime purchase and other payments services. Lumicash offer merchant payments, money transfers from wallet to bank and from bank to wallet, as well as utility payments for electricity and tax payments. [85] EcoCash also offers merchant payments and is working on both a bill payment and a banking integration function. Moreover, EcoCash supports remittances and in November 2018, piloted a digital credit product after receiving a one-off approval from BRB .[86] SmartPesa offers P2P transfers, merchant payments, CICO services, and allows customers make bulk payments such as salary disbursements. Smart is also planning to roll out micro credit and micro savings products through SmartPesa.

Figure 6.2: Evolution of number of mobile money accounts in Burundi, July 2017 - March 2018




Source: BRB (2018) in WB (2018)

**The wider Fintech ecosystem is in its nascency.** A local third-party payment aggregator called PayWay has also emerged, providing merchant and utility payments, supporting banking and mobile money integration, airtime top-ups, as well as payment integration with the Burundi Revenue Service. AuxFin, a Belgium social enterprise, has also set-up shop in Burundi, in addition to handful of other countries. Focused on rural financial inclusion, the company targets farmers. Its Universal Method of Value Access (UMVA) offers e-banking, payments and remittances service, leveraging a technology akin to blockchain.[87] Services offered are expanding to include the sales of crops, targeting key value chains, and featuring smallholder farmer clubs. [88] Auxfin is also working closely with Burundi's vibrant microcredit ecosystem, under the Burundi MFI Network (RIM).[89]

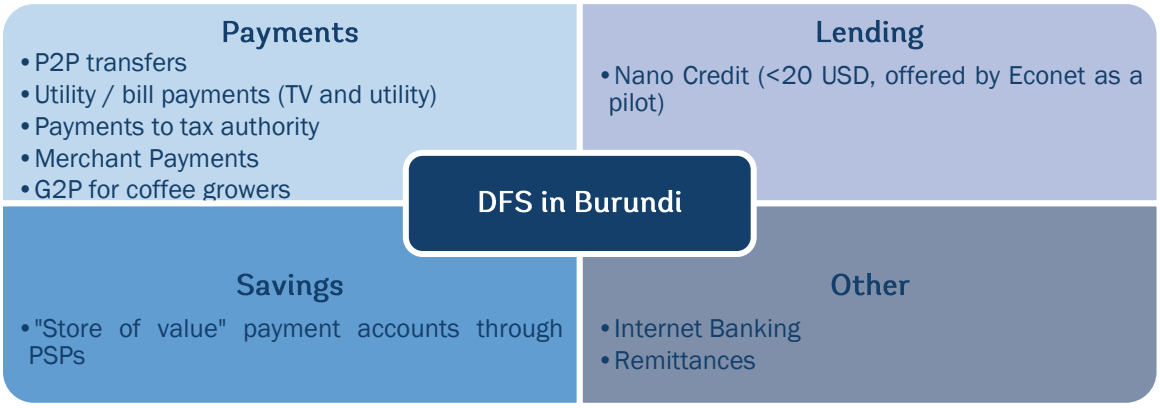
**There appears to be limited uptake of DFS among banks and MFIs operating in Burundi.** While digital services currently on offer are a great starting point for expanding financial inclusion, as well as enabling growth of online transaction, deepening financial inclusion will require that more financial institutions support and leverage DFS to expand the local DFS service offering beyond those offered by mobile money providers (Figure 6.3 summarizes the DFS offering in Burundi). Burundi's banking sector is made up of 10 commercial banks,[90] which have been slower to embrace digital channels.

**The microfinance sector in Burundi currently also plays an important role in the local financial ecosystem.[91]** There are 42 MFIs in Burundi, 25 of which are members of RIM. While MFIs see the importance of leveraging digital solutions, weak access to electricity and management information

[85] See: https://lumitel.bi/package-mobile/1515078394401
[86] See: https://econet.bi/index.php/fr/econet-leo-shop/faq-s
[87] See: http://www.auxfin.com/#about
[88] See: http://www.rimburundi.org/
[89] RIM is the apex organization for microfinance institutions gathering 25 MFIs out of 42 in the country, as well as one financial institution.
[90] The ten commercial banks active in Burundi are Banque Commerciale du Burundi, Banque de Crédit de Bujumbura, Banque Burundaise pour le Commerce et l'Investissement, Interbank Burundi, Banque de Gestion et de Financement, FinBank, Ecobank Burundi, Diamond Trust Bank Burundi, Kenya Commercial Bank Burundi Ltd, Cooperative Rural Development Bank Burundi.
[91] As of June 2018, its assets represent some 14.4 percent of banks' total assets.

systems (MIS) limit their ability to leverage digital solutions.[92] Scale up of G2P and P2G payments could play an instrumental role in supporting further services development and diversification, as well as encouraging greater uptake and active usage (see Box 13).

Figure 6.4: Types of Digital Financial Services in Burundi




### Box 13: Government's use of digital payments

**While use of mobile money for G2P payments remains low in Burundi, its use appears to be on the rise.** 2014 data from Findex shows that less than 3 percent of adults were receiving direct government payment. Traditionally, these payments have been pushed through brick-and-mortar financial institutions or made in cash. For example, as it stands, about 50 percent of G2P payments made to pay civil servant salaries leverage accounts with the National Postal Administration. However, the rise of mobile money and fintech has helped to slowly expand the use of both digital G2P and P2G payments:

- **Tax collection.** In June 2017, the OBR (tax authority) partnered with Lumicash to offer a mobile payments solution for paying taxes. The initiative, called "*Riha OBR na Lumicash*", has been positively welcomed by taxpayers.
- **Supporting farmers.** In June 2018, the Ministry of the Environment, Agriculture and Livestock also entered into a partnership with Lumicash to allow farmers to make payments for government-subsidized chemical fertilizers. This has shortened the distance that farmers need to travel to pay at the counters of the MFI COOPEC or the National Posts Administration, which are only located in the main towns of the communes. The Ministry has also worked with AuxFin.
- **Utility bills.** The payment aggregator PayWay has entered into a partnership agreement with the Regideso, the state-owned provider of water and electricity, to allow consumers to process their payment of electricity and water bills via their application.
- **Social Protection.** The social safety nets project (Merankabandi) is providing cash transfers to around 56,000 households – close to 40 percent of all households included in the country's social registry – targeting the country's poorest provinces. As part of Burundi's COVID-19 response strategy, said cash transfers may be scaled up to richer urban areas, which are not currently part of Merankabandi.

**An expansion of G2P and P2G payments have the potential to constitute a strong entry point for further development of digital services.** Notably, the BRB reports major digital payments spikes around March and September time, each year, when rental tax and school fees are due. This aptly illustrates how uptake can be encouraged by offering digital payments options for a range strategic services and use-cases.

[92] Power cuts in rural and peri-urban areas as a major constraint. On the technical side, their MIS is inadequate even for basic uses such as reporting to the Central Bank, suggesting that technical capacity to implement digital solutions is low.

### 6.2.2 Enabling Environment for Digital Financial Services

**While recent improvements in the regulatory environment have allowed for the proliferation of mobile money services, many factors still contribute to a poor enabling environment for DFS.** Key recent developments include a 2017 Banking Law, which established a new type of entity called Payment Service Provider (PSP), clarified the rules of market engagement, and relaxed know-your-customer (KYC) requirements allowing customers to hold up to $50 USD in mobile money without an ID – lowering the barrier of access for many Burundians who lack formal ID.

**The scale-up of related payments faces several constraints in Burundi.** These include:
Weak development of the formal financial market

- Weak access to mobile devices;
- Weak data and consumer protection, including limited measures to protect against fraud and data security breaches;
- Weak access to ID required for setting up a DFS account; and
- Growing but limited access to agents (with sufficient liquidity at access points).

#### 6.2.2.1 *Laws, policy & regulation: Implementation capacity*

**In 2017, the BRB promulgated a new banking law, which improved the regulatory environment for DFS.** The law created a new licensed entity, the payment service provider (PSP), authorized to provide e-money transfers and other related electronic transactions. PSPs are limited to providing payment accounts and are not authorized to mobilize deposits beyond a limit of BIF 100,000 (or $50). The law allows banks, MFIs and PSPs to provide services through agents. The exact function of agents has not been fully expanded on by BRB, but its introduction shows promise in terms of expanding access to DFS.

**While the new law is comprehensive and significantly increases the supervisory responsibilities of the BRB, it is also complex.** As it stands, the BRB is assumed to lack the capacity for adequate supervision, and could stand to benefit from further capacity building and support in implementing the new provisions introduced by the law. For example, BRB may wish to consider a shift toward risk-based supervision of authorized entities, and would require related training.[93]

#### 6.2.2.2 *Managing the risks of digital finance*

**Burundi's consumer protection regulation applies to all financial service providers, including agents and non-bank financial institutions.** The regulation covers disclosure and transparency requirements that help protect customers, as well as calling for fair treatment and business conduct. Moreover, the BRB appears to have the legal mechanisms in place to enforce related provisions, including fines, suspension of operations, or even cancelation of the operating licenses.

**However, legal ambiguity in several areas could create problems for consumers.** For instance, the regulation prohibits abusive practices is relation to debt collection, without specifying what is considered abusive or unfair. Similarly, financial service providers are asked to protect customer data, using the data only in the context in which it was provided. However, the legal provisions for safely collecting and using said data, as well as client consent are not well-defined. When faced with legal ambiguity, existing regulation fails to clarify whether the law will hold – more specifically, whether it should side with the consumer or services provider. Finally, financial service providers have to set up alternative dispute resolution mechanisms, where the BRB is able to offer legal recourse and support for dispute resolution. These mechanisms rely only on the written submission of complaints, which may preclude illiterate users from access them.

[93] World Bank (2019). *Driving Financial Inclusion in Burundi: State of financial intermediaries and inroad of mobile money.*

**Anti-Money Laundering and Client Due Diligence are not spelled out in detail in the 2017 banking law that establishes the PSP status.**[94] Burundi's legislative framework in this area is broad and primarily covered by the Anti-Money Laundering Law of 2008, which involves any organization offering money transfers. This law requires that customers' identity should be ascertained before a business is established; all institutions should maintain internal AML controls; and that institutions should retain information on all clients, including ID, for at least ten years.

As noted above, other legal and regulatory gaps on issues such as data protection, cyber security etc. adversely affects DFS risk management.

### 6.2.3 Constraints to Digital Financial Services Development

#### 6.2.3.1 *Investment gap*

**Formal financial institutions are interested in the DFS market but lack the knowhow and capacity to do so.** Banks understand that being competitive in this market means that they must cater to the vast un-banked and underbanked population in Burundi, leveraging technology to offer more innovative and accessible service alternatives. A major constraint is the strong controls on foreign exchange that are currently in place, precluding banks from procuring the requisite foreign technology to develop these solutions in-house.

**Insufficient investment has prevented the market from achieving any major DFS breakthroughs.** Both financial institutions and mobile money service providers require significant time, resources and attention regarding product development, developing agent networks, improving performance management, customer education and marketing.

#### 6.2.3.2 *Delivery channels and agency networks*

**In 2016, Burundi had about 142 ATMs and about 3.22 commercial bank branches per 100,000 adults.** [95] Bank branches are mostly found in urban areas, with over half located in Bujumbura alone - disproportionate to Burundi's rural reality. Anecdotal evidence indicates that the cost of setting up a bank branch in Burundi is approximately $600,000 USD, making it an unattractive investment proposition. In this sense, an increasing network of mobile money agents has played an instrumental role in expanding access through DFS.

**It is now estimated that there are more agents providing mobile money services than there are traditional access points, even though a lot of these agents may be dormant.** In 2018, Econet Leo reportedly had some 10,000 registered agents, Lumitel had 3,500 and Smart had 1,500.[96] The third-party payment aggregator PayWay reportedly has some 400 outlets. Agent network build up and maintenance is a time- and resource-intensive activity. Service providers need to ensure that there is a strong business case for agents to onboard and start working. In addition, having a large number of dormant agents can cause damage to the reputation of a mobile money service provider. As it stands, there is ample room for further network expansion and better management.

**Moreover, in the absence of service and agent interoperability, the number of agents available are likely to be restricted.** New DFS providers recruit agents independently, which can be slow and costly, involving expenses such as a dedicated point of sale device for the agent. In addition, the agent typically needs to maintain an e-money float with each organization it represents. In practice, few agents can afford to fund floats with many DFS providers and will focus on the two or three that yield the highest returns. This restricts the ability of new market entrants to gain distribution and market presence. Agent interoperability involves agents using a single e-money float for multiple DFS providers, and ideally a single point of sale device. This allows agents to support a larger number of

[94] Ibid.
[95] IMF Financial Access Survey (2016).
[96] World Bank (2019). *Driving Financial Inclusion in Burundi: State of financial intermediaries and inroad of mobile money.*

services and provide customers with more choice and more competition between providers. Agent interoperability is still a nascent concept but is working successfully in a few markets including Tanzania. A similar type of service in Burundi could expand the agent network, reduce cost of existing providers and expand competition for new market entrants.

#### 6.2.3.3 *Retail Payments Infrastructure*

**BRB is responsible for the oversight of the national payment system, and is the operator and owner of the Automated Transfer System (ATS).** The ATS comprises of the following two systems: (i) a Real-Time Gross Settlement system, which is responsible for final settlement of interbank obligations; and (ii) an Automated Clearing House, which clears retail credit transfers and electronic checks. From a technical perspective, the ATS is operational but not in practice - participant banks have not yet integrated their core systems with the ATS.

**BI-Switch was set up in 2018 to enable full interoperability in the financial sector but be actioned.** BI-Switch is designed to connect all bank, card, mobile and internet-based payments, starting with the banking sector. In early 2019, BI-Switch's software was upgraded to include mobile and internet-initiated payments. Roll-out of BI-Switch is currently being piloted, via the integration of four banks, with a plan to eventually include mobile money service providers in this interoperability project. However, there have been significant delays incurred, due to capacity gaps, on all sides. As it stands, there is thus no interoperability between existing mobile money services, nor between mobile money service providers and banks – each mobile money service provider serves its own customer base independently.

**As noted above, expanding interoperability could help improve the business model for existing and future service providers, but also improve the customer experience and service offering.** A lack of interoperability tends to reinforce cash as the payment solution of choice, whereas full interoperability can help expand services coverage. The *Association des Banques et Etablissements Financiers du Burundi* (ABEF)[97] is one of the chief architects behind BI-Switch, and along with BRB, could play a more hands-on role in terms of supporting further capacity building to enable swift implementation.

#### 6.2.3.4 *Credit Infrastructure*

**There have been various attempts to set up a working credit registry for banks and MFIs, but most attempts have been thwarted by the BRB's unwillingness to share requiste data.** The existing credit registry is currently limited to a semi-formal list of defaulters, or a so-called "black-list". This database is wholly inadequate, as it fails to provide institutions with the data needed to properly assess credit risk. Moreover, not all institutions contribute to this central file, making it an unreliable source of. information. Setting up a private credit bureau and collateral registry was recently explored in 2017, however the government was unwilling to share sensitive data with a private company.

**In the absence of a credit bureau, there is information asymmetry which restricts financial institutions from extending loans to micro small and medium size enterprises (MSMEs), and households** – effecting the enabling environment for private sector development (discussed further in the next chapter). A private credit bureau would provide lenders with products and services, such as credit reports, fraud alerts and credit scoring, supporting better credit management practices, and allowing lenders to share credit information, increase financial inclusion and facilitate mobility. In addition, a well-functioning, centralized electronic collateral registry for movable securities could give the much-needed boost to the agricultural sector in Burundi. This would allow for the entrepreneurs and small farmers to obtain loans against movable securities such as agricultural equipment, future harvests, warehouse receipts, accounts receivables, livestock, etc. In doing so, it would contribute to the financial inclusion of large parts of the population currently excluded..

[97] ABEF is the apex organization for commercial banks gathering ten banks and two financial institutions.

#### 6.2.3.5 *Demand-side barriers*

**Although demand-side data is scant, evidence available suggest that there are large pockets of unmet demand, where local communities remain underserved.** Financial service providers should leverage this demand to support further service and network expansion, while remaining sensitive to the many demand-side barrier that may adversely affect uptake, as well as the financial preferences of low-income households. Notably, many traditional FSPs remain unattuned to the preferences of the unbanked and what they desire from a financial product.[98] Further research on customer needs could help support the design of attractive and tailored products. Notably, the agricultural sector and the fledgling startup ecosystem could be key consumer groups, whom are current under-served.

**Mobile phone penetration is likely to be one of the most significant barriers to further DFS adoption.** Mobile money requires only USSD functionality, constituting a basis for supporting further financial inclusion, using basic feature phones. However, the absence of weak smart-phone ownership is likely to limited innovation and the level of service sophistication that can realistically be offered to consumers. Innovative financing mechanism could, for example, be leveraged to support great access to devices. This issue is discussed in Chapter 6.

**As noted in Chapter 5, Burundi still lacks a centralized unique national ID system.** Burundians continues to rely a variety of formal IDs such as driver's license and passports, which are primarily paper based. Weak access to ID coverage is likely to be a key demand-side constraint, preventing consumers from opening an account. According to the World Bank Identification for Development data, in Burundi 73 percent of the population had a national ID in 2018. Equally, the absence of a robust and digitally enabled ID system significantly hinders the ability of FSPs to digitally authenticate transactions, connect back-end digital system (such as credit registries, social registries) to a unique ID, and thus developing a more enabling ecosystem for DFS expansion.

**Finally, weak financial and digital literacy (as noted in Chapter 4) is likely to act has a cross-cutting barrier**. Here FSPs have a role to play, along-side government and development partners. Increasing the use of mobile payments could allow the population to access the formal financial systems, but these services raise important issues in relation to consumer protection in the absence of adequate financial and digital literacy - significant capacity and knowledge gaps are key binding constraints to wider DFS adoption. Consumers should be able to understand risks in order to make informed decisions. These skills will also be critical to support customer on-boarding for more sophisticated DFS products and services.

## 6.3 Recommendations & Next Steps

**Despite recent growth in the mobile money market and progress made on components of the regulatory environment, gaps remain in creating an enabling environment.** On the supply side, there is still room for access network and service expansion. Weak access to enabling infrastructure, support for investment, capacity and knowledge gaps limit the ability of local industry player to support DFS development. While there appears to be unmet demand, several barriers hamper further uptake, including access to electricity, mobile device and ID ownership, as well as poor digital literacy. Opportunities exist to expand G2P payments and use development partners' programs to mainstream digital payment solutions. Finally, data gaps prevent accurate benchmarking and understanding of demand, impeding service development.

[98] GSMA (2019). Navigating the Shift to Digital Humanitarian Assistance: Lessons from the International Rescue Committee's Experience.

Table 6.1: SWOT analysis on digital financial services

| Strengths | Weaknesses |
|---|---|
| • The **mobile money market is dynamic** with three providers,<br>• **There is a comprehensive new law on PSP regulation** for banks and non-banks<br>• BRB recognize **importance of financial inclusion** | • **Banks and MFI have been slow to harness DFS**<br>• Financial products offered by providers are **not always adapted** to the needs and preferences of low-income customers<br>• **Lack of effective interoperability** amongst financial actors<br>• **Lack of a centralized national ID** hampers the safety of financial transactions, and service development<br>• **Lack of up-to-date data** on financial inclusion and usage of mobile money services<br>• **Demand-side barriers** (access to devices, digital literacy etc.)<br>• **No centralized credit or collateral registry** |
| **Opportunities** | **Threats** |
| • **High potential to reach unbanked individuals** with mobile money, backed by strong demand<br>• **Scope to expand the existing agent network,** and look at **agent interoperability**<br>• **Interoperability possible through BI-Switch,** if accelerated implementation is acquired<br>• **Automated Transfer System (ATS) exists**, but not yet fully implemented<br>• Scope to boost uptake/service development via **G2P/P2G payments**<br>• **Fintech and Agtech** provide untapped sectoral opportunities to develop DFS | • Burundi's recent **economic performance**<br>• The BRB only has a **limited supervisory capacity** to manage the complex and comprehensive regulation DFS required<br>• Uptake of mobile money is slowing<br>• **Regulatory gaps / ambiguity** e.g. in reference to consumer and data protection.<br>• **Investment gaps / barriers** |

**The following recommendations could support the development of DFS in Burundi:**

## Objective 1: Stimulate demand for DFS and further product development

**R1. Explore scope for expanding G2P and P2G.** This would not only help encourage services development, but also stimulate further uptake among users, if applied to key services and use-cases. Government could start by mapping current payment flows, and subsequently drafting a roadmap for gradual roll-out.

**R2. Digitize payments along agricultural value chains,** by exploring opportunities for using DFS along this course This would imply that all payments for agricultural inputs, harvest, and premiums are paid digitally. There is opportunity to pilot in the coffee sector, where certain subsidies are already made through mobile money service providers. Related digitization would lead to financial inclusion for the farmers and enable better outcomes in terms of formal savings and in the future, credit.

**R3. Improve customer education and understanding of DFS.** Activities to promote digital/financial literacy and awareness of DFS should be launched. There is scope to work with both public and private sector players to promote DFS and to encourage customer acquisition and usage, to demonstrate how investments in marketing and customer outreach can lead to positively effect customer behavior and business expansion.

## Objective 2: Build the infrastructure for digital financial services

**R4. Set up a National Payments Advisory Council to drive market-wide interoperability.** A National Payments Council is necessary to coordinate payment service providers and develop a strategy for promoting greater interoperability in the market, as well as the use of digital payments. This could also act as a forum for exploring the introduction of agent interoperability.

**R5. Develop a modern ID system.** As noted in Chapter 5, a more robust foundational and digitally enabled ID system would increase access to key services, including DFS. It is also a crucial component in the development of many other MIS that help build-out existing retail and credit infrastructure, and support DFS innovation.

**R6. Develop a modern credit reporting system**, including secured transactions and collateral registry reforms.

## Objective 3: Boost capacity and access to data in the financial sector

**R7. Improve the supervisory capacity for the BRB.** The BRB's recent implementation of comprehensive regulation around DFS has pressure on the supervisory capacity of the central bank. Assistance in strengthening this capacity would allow BRB to exercise greater oversight of the financial sector.

**R8. Partner with FIs to improve capacity.** Although banks are interested in offering DFS, they are struggling to develop a strong value proposition. Banks require technical assistance in order to offer a full suite of financial services to unbanked households.

**R9. Build capacity to accelerated implementation of the BI-Switch and ATS**. Additional capacity injections are needed to speed up completion of the interoperability project and integration with the ATS.

**R10. Address lingering regulatory gaps and legal ambiguity.** Related gaps introduce risk and jeopardize customer protection and data security.

**R11. Bridge existing data gaps.** The absence of reliable data creates challenges in accurately assessing the current state of digital financial inclusion in Burundi, including regional benchmarking.[99] While Burundi's levels of financial inclusion are among the lowest in SSA, recent incursions made by mobile money, suggest that this may be changing, prompting the need for up-to-date and representative data. Further research, as well as wider use of consumer surveys to help FSPs enhance their understanding of customer behaviors, should be supported.

**R12. Improve the investment climate.** As will be highlighted in Chapter 7, there is urgent need to strengthen the investment climate for financial actors in Burundi.

[99] While the country participated in the Findex surveys in 2011 and 2014, it was not conducted in 2017.

# In Focus 2: Opportunities for Agtech

**As noted at the outset of this report, the agriculture sector continues to be the bulwark of Burundi's economy.** Burundi's agricultural sector contributes some 29 percent to GDP, yet value addition is limited. The sector is currently the main source employment for a majority of Burundi, as well as critical to securing Burundi's food supply and stemming mounting food insecurity. Supporting greater productivity and market-linkages, particularly in key value chains such as coffee, could help improve sectoral performance, resulting in larger yield and economic benefits.

**Global experience suggest that digital technology can increase productivity with economies of scale and make smallholder farmers more competitive in the process.** It can reduce the costs associated with linking producers (small-scale farmers) and buyers; reduce information asymmetry between smallholder farmers and middle-men; and help farmers make more precise decisions on resource management by improving access to information (e.g. based on weather and market data); to name but a few examples. Digital solutions can play an important role in the adoption of good agricultural and manufacturing practices, through the development of platforms and universal use of smartphones and internet, which enables best practices to be shared. [100]

**Through initiatives both on and off the farm, digital technologies have the potential to increase the efficiency, equity and sustainability of the agricultural value chain.**[101] On the farm technologies can leverage granular data about farmers' crops and animals, combined with information on how to exploit the available physical, natural and human capital most efficiently, and maximize output. Off the farm solutions can reduce transaction costs arising from interactions with input and output markets, as well as the Government. [102]

**Several encouraging examples of effective application of technology in the agricultural sector already exist in Burundi, but there is scope for further scale-up:**

- As noted in preceding chapter, the Ministry of the Environment, Agriculture and Livestock launched an initiative with digital payments. The pilot allows farmers to make digital contributions to the state-funded chemical fertilizers scheme, reducing the distance that farmers needed to travel to pay in person at MFI COOPEC or the National Posts Administration, which are only located in the main towns of the communes. [103] To date this model has been piloted in four provinces.
- Similar schemes, involving e-payments of fertilizers and seeds, have also been run by AuxFin, funded by the Belgian Development Agency
- The Ministry of the Environment, Agriculture and Livestock has also piloted digitally enabled weather applications in the past.
- The AgriCoach project is provides online training modules to some 100,000 smallholder farmers, as well as facilitating real-time digital information-sharing on crop management practices. The project has been rolled-out across Gitega, Kayanza and Karusi provinces.[104] The wider program, called Good Agricultural Practices For All (GAP4A), is funded by the Dutch Ministry of Foreign Affairs and is being implemented by a consortium led by AUXFIN.[105]
- The Swiss Development Agency has supported the partial digitization of the existing land registry.

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[100] World Bank (2020). *Digital Acceleration of Agriculture Transformation.* (Forthcoming)

[101] Ibid

[102] Ibid

[103] http://www.provincegitega.gov.bi/index.php/81-actualites/225-le-ministere-de-l-environnement-de-l-agriculture-et-de-l-elevage-vient-de-trouver-chez-vietel-un-mode-de-paiement-efficace-des-engrais-chimique-subventionnes

[104] AUXFIN International (2020). *AgriCoach evaluation – Report case-study evaluation season A 2020.*

[105] Using a community-based approach, this scheme has created farmers group (consisting of no more than 50 farmers). Farmer groups are provided with tablets and access to online training material, in exchange for a modest monthly subscription fee. By encouraging technology adoption among smallholder farmers, the GAP4A project aims to improve market conditions and access to seeds and fertilizers, as well as create more effective sales networks.

As noted in the previous chapter, there is ample scope for scaling Agtech in Burundi, for example, through the development of targeted digital financial services.

**While digital innovation should be spearheaded by the private sector, the Government has an important role to play in readying the enabling environment introducing policy and incentives to remedy eventual market failures or inadequate information availability.** The appropriate government intervention will depend on the context and the agri-food systems targeted, the circumstances under which farmers adopt technologies, and the performance of local markets. However, as a starting point, government should ensure that the pre-requisite foundational elements are in place for successful digital transformation:

- access to high quality connectivity;
- access to digital devices among farmers;
- access to other enabling rural infrastructure, including electricity, roads and logistics, and
- capacity building of both farmers and Government staff in charge of facilitating digital transformation of the agricultural system

Overall, actions take should be highly attuned to the risk that comes with greater digitalization, particularly the risk of digital exclusion of rural communities, as well as the competitive advantages that can result from first-mover investment and data accumulation.[106]

**Consultation with the Ministry of the Environment, Agriculture and Livestock suggested that Burundi still lacks many of these foundations.** In particular, the Ministry notes that many smaller initiatives have been piloted but failed to take-off, in part because they have proved costly to promote and partially because trust in related system is still weak. Consequently, the high start-up costs involved have prevented the launch of any further digital schemes. The Ministry stressed that a culture shift is still required, as given the limited familiarity and confidence in digital tools and systems, many farmers prefer a paper-based confirmation or receipts when making digital transactions. The private sector may need to spearhead related change management and improve consumer awareness to support on-boarding with commercial incentives, increasing the probability of sustainability. Weak phone penetration among farmers in another key constraint.

*For more information, kindly refer to the forthcoming World Bank flagship report on 'Digital Acceleration of Agriculture Transformation'.*

[106] World Bank (2020). *Digital Acceleration of Agriculture Transformation.* (Forthcoming)

# 7 Digital Entrepreneurship

Key messages:

- **Low technology adoption and the high cost of broadband both hamper digital entrepreneurs, as this limits consumer base and increases high input costs per customer**
- **Increased digital adoption in agriculture could significantly help Burundi's smallholder farmers, which represent 90 percent of the population.**
- **There is no dedicated strategy for supporting digital innovation in Burundi.**
- **Many aspects of the digital entrepreneurship ecosystem not conducive to supporting start-ups**, including the wider regulatory environment, weak access to early-stage finance, as well as the market size.
- **Burundi's innovation ecosystem is still in its infancy, with limited support structures present.** Despite its young population and recent surge of digital entrepreneurship, Burundi is home to only one tech hub.

## 7.1 Importance of Digital Entrepreneurship

### 7.1.1 Socioeconomic Rationale for Building the Digital Entrepreneurship Ecosystem

**Private sector innovation and application of digital technologies play an instrumental role in fueling productivity gains, supporting service development and opening up new markets, which can accelerate inclusive economic growth.** There is a high correlation between entrepreneurship and income-level. The ten top-ranking countries of the Global Innovation Index all share the characteristic of high GDP.[107] Entrepreneurship has the potential to create new businesses and jobs, generating wealth and improving standards of living. Digital entrepreneurs can innovate in many sectors ranging from financial services, renewable energy, education, agriculture and health. The solutions proposed by startups make it possible to respond to specific problems by leveraging digital technology, in a way that is adapted to the local context. As noted in the In-Focus Section 1, there are important opportunities around female entrepreneurship, based on a high female labor participation rate which indicates that many women are interested in economic opportunities.

### 7.1.2 Alignment with Country Development Strategy & Goals

**The PND2018-2027 prioritizes agricultural development yet fails to recognize the cross-cutting importance of digital entrepreneurship.**[108] While it does not include specific propositions for digital entrepreneurship, it does emphasize the importance of structural institutional reforms to support entrepreneurs in the agricultural sector. Digital entrepreneurs can support economic development by creating digital platforms and solutions that target farmers and agriculture sector – be it via market exchange platforms for farmers and buyers, which provide real-time market prices for agricultural

[107] Global Innovation Index, 2018
[108] IFAD country facts: Republic of Burundi.

products, DFS solutions discussed in the last chapter, or e-learning applications that improve farming practices and thus production output.

## 7.2 Diagnostic Findings: Current State of Digital Entrepreneurship

### 7.2.1 State of the Digital Entrepreneurship & Innovation Ecosystem

**Burundi's economy is still recovering.** The country is still reeling from years of civil war. The 2015 political crisis and the turbulence that followed triggered negative growth figures for the first time in a decade. Severe economic sanctions imposed and withdrawal of donor funding had a detrimental impact on the economy – leading to weak foreign currency reserves and a budgetary deficit unable to sustain critical public investments. After a decade of steady (4.2 percent cumulative average) growth, from 2004 until 2014, Burundi went through two consecutive years of recession in 2015 (-3.9 percent) and 2016 (-0.6 percent), where the local economy contracted. Today, Burundi's economy is slowly recovering, with growth recorded in 2017 and 2018 at a modest 0.5 and 1.6 percent, respectively.[109]

Table 7.1: Key indicators of digital entrepreneurship

| Indicator | Burundi | SSA |
|---|---|---|
| Ease of doing business score,/100 (2020) | 46.8 | 51.8 |
| Value of ICT goods imported per inhabitant, USD (2018) | 3.4 | 49.4 |
| Manufacturing firms using emails, % (2014) | 58.2 | 56.8 |
| Manufacturing firms spending on R&D, % (2014) | 20 | 17 |
| Manufacturing firms exporting directly at least 10 percent of sales, % (2014) | 14.7 | 13.7 |
| Firms with female top manager, % (2014) | 16.3 | 15.5 |
| ICT adoption index, /100 (2018) | 18.4 | 29.6 |
| Global Innovation Index, /100 (2019) | 17.6 | 24.3 |

Source: WB, UNCTAD, WEF, WIPO

Note: Given the small size of Burundi's manufacturing industry, figures pertaining to the uptake of digital tools in this sector are unlikely to reflect wider digital adoption by traditional industry, which is dominated by agriculture. Moreover, figures recorded prior to 2015 crisis are unlikely to reflect today's reality.

**However, prior to the 2015 political crisis, Burundi was a top business reformer – as demonstrated by consistent improvements in its Doing Business (DB) rankings.** Burundi ranked among the economies that had improved its DB ranking the most for three consecutive years, between 2011 and 2013. Despite these impressive achievements, the 2015 crisis reversed many of the advances that had been made. Today, Burundi ranks 166th out of 190 countries in the WB Doing Business survey, scoring 46.8 out of 100 (behind the SSA average, at 51.8) due to factors such as weak access to capital and electricity.

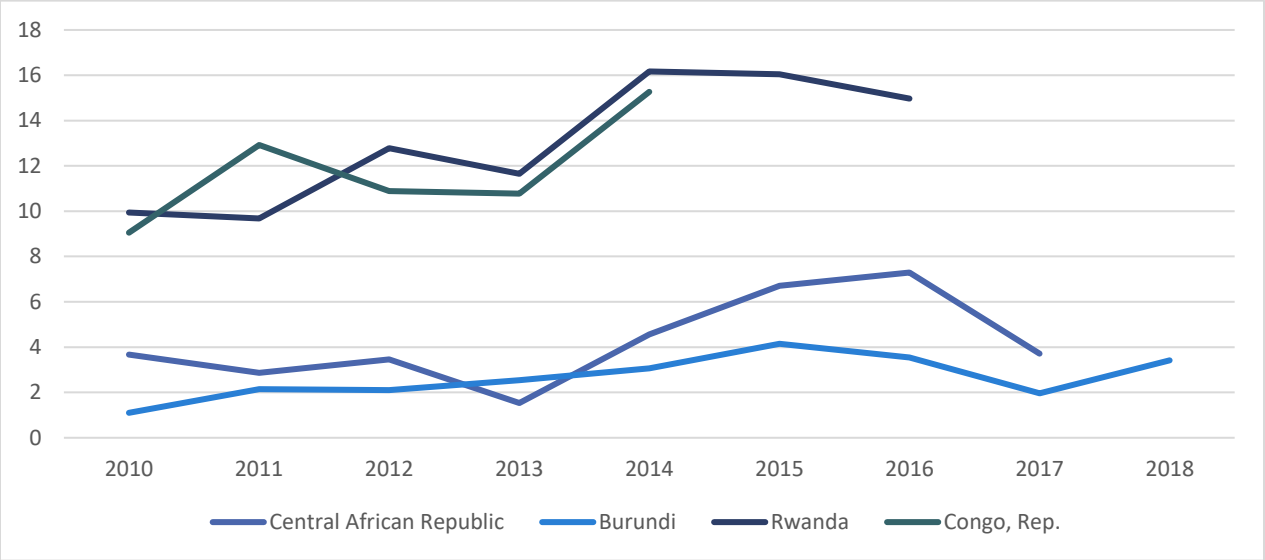
**According to 2019 WEF Global Competitiveness Index (GCI), where Burundi ranks 135th out of 141, political instability and corruption emerge as major deterrents for investors.** Lack of adequate resources, unstable political environment, and insufficient incentives to retain and attract top talent are the key barriers hindering Burundi from attracting and retaining its top talent. For digital entrepreneurship to flourish in Burundi, the issues mentioned above are fundamental and must be addressed to ensure sustainable development of the sector.

**Weak access to foreign currency reserves continues to impact Burundi's investment prospects.** Foreign exchange pressures have had a negative impact on imports, which has prompted the BRB (central bank) to impose restrictions on the transfer of foreign currency abroad. These provisions have adversely affected the operations of numerous digital service providers, including telecom companies and digital financial services providers (as noted in the previous Chapter) that require foreign currency to pay back debtors, dividends, expatriate staff salaries, as well as acquire key supply chain components including essential equipment and machinery.

[109] World Development Indicators

**Figure 7.1 illustrates the slow growth of Burundi's imports of ICT goods, a key input for digitally enabled businesses, compared to countries such as Rwanda or the Republic of Congo (RoC).** Assuming that most ICT goods are imported, it can be interpreted as a proxy for the consumption of ICT goods. In other words, this is a strong indication that Burundi is underequipped with ICT goods, which constitutes a major barrier to the development and adoption of digital solutions. Burundi is on a similar trend as CAR, and the gap with regional peers like Rwanda and RoC has increased over the past decade.

Figure 7.1: Value of ICT goods imports per inhabitant, USD




Source: UNCTAD

#### 7.2.1.1 *Digital Entrepreneurs & Startups*

**Meanwhile, Burundi's innovation ecosystem is still in its infancy.** Only a handful of digital entrepreneurs exist and many struggle to scale. Pockets of digital innovation are emerging, particularly around Burundi's tech incubator – BujaHub. Notable digital startups include PayWay (a payments platform aggregator – see Chapter 6), E-Soko (an online e-commerce market platform), and Nova taxi (a ride-hailing application). However, the national innovation system still lacks significant support structures to enable digital entrepreneurs to flourish, including access early stage financing and acceleration services available in more mature innovation ecosystems. The lack of accelerators, growth capital, and support structure has led to the demise of most startups. Moreover, structural barriers and high input costs present a major challenge for fledgling digital entrepreneurs.

#### 7.2.1.2 *Digital adoption by traditional industries*

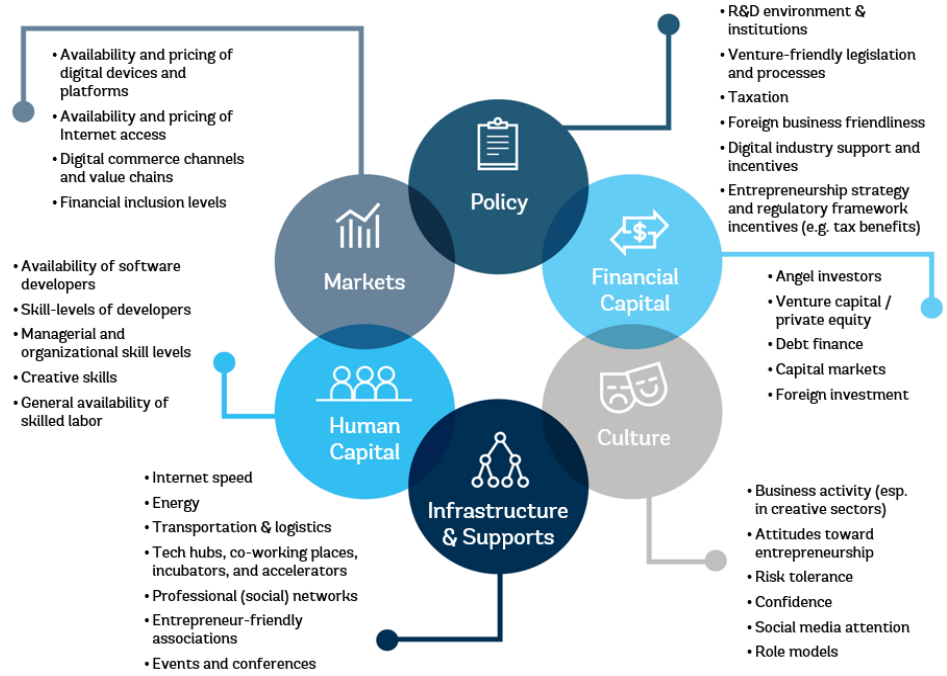
**The overall usage of digital in traditional sectors remains remarkedly low.** The main sectors utilizing digital technology are financial services, which consists almost exclusively of mobile money services (as noted in the preceding Chapter). As noted above, the WEF GCI ranked Burundi at the bottom of the list (135 out of 141).[110] The market reality acts as a strong disincentive for traditional sectors to invest in digital technologies. Currently, the adoption of digital tools and systems in the agriculture sector is low, but there is ample room for growth if the right foundations and incentives are in place, as discussed in the AgTech In Focus section. Stakeholder consultations suggest that few MSMEs are leveraging technology to support their business. This is partially due to costs incurred, but also due to poor digital literacy. This not only limits the opportunity for related productive gains but also prospects for developing Business-to-Business (B2B) digital solutions.

[110] World Economic Forum (2019). The Global Competitiveness Report.

### 7.2.2 Constraints and Opportunities for Digital Entrepreneurship & Innovation

**This section analyses the primary drivers of digital entrepreneurship, based on the Babson Entrepreneurship Ecosystem Project.**

Figure 7.2: The Babson ecosystem for digital entrepreneurship consists of many players




Source: Babson Entrepreneurship Ecosystem Project

#### 7.2.2.1 *Regulations, Policies & Institutions*

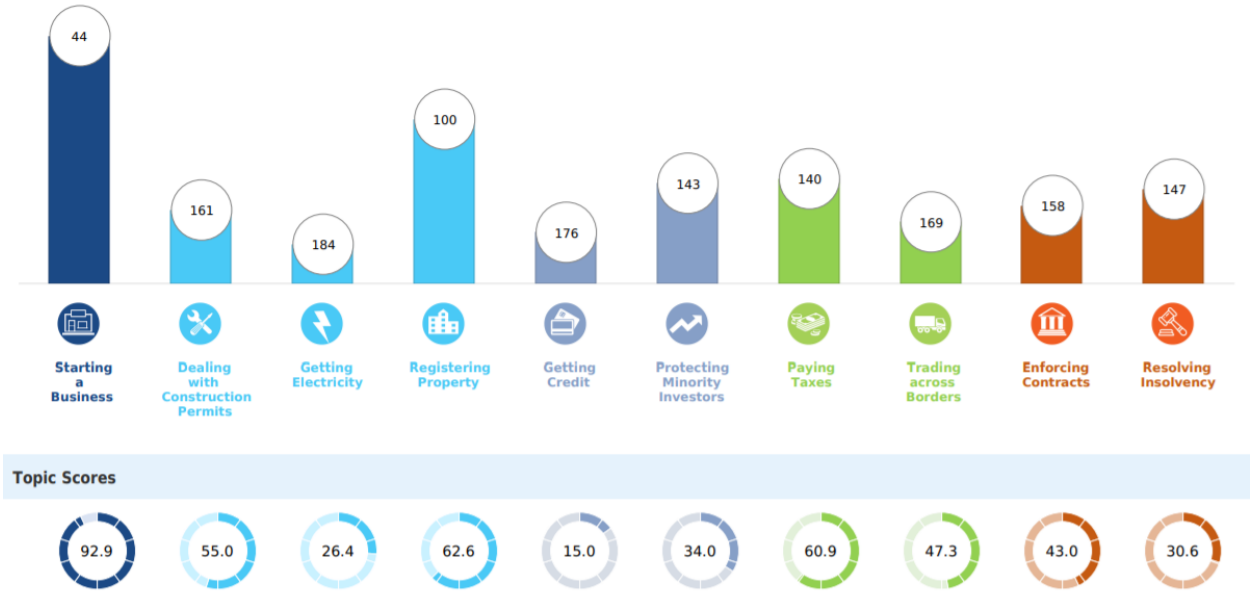
**The regulatory and legal framework for digital is almost non-existent and provides few incentives for digital entrepreneurs.** Stakeholders suggest that laws are either too rigid or missing completely. As noted in earlier chapters, there is a regulatory vacuum in relation to e-transactions, data and online consumer protection that also thwarts private sector development in the digital space. There is also a legal vacuum in relation to emerging technology such as AI, drones and internet of things (IoT), as well as weak support for intellectual property (IP) protection that is likely to adversely impact digital innovators moving forward. A growing inclination toward market concentration in the telecoms sector, exemplified by the case of BBS and International Telecom Services, suggests that there is inadequate regulatory capacity in relations to managing competition issues.

**Moreover, many stakeholders also point to a prohibitive tax regime**, which squeezes the already slim profit margins generated, based on the ratio of high input costs and small consumer base served (issues discussed further below). This certainly applies to the telecoms sector. Moreover, there appear to be no tax incentives in place for local or foreign investors in technology. For digital businesses, robust revenue collection is likely to be a prerequisite for implementing tax incentives.

**As noted above, there is also no dedicated strategy for supporting digital innovation.** Nor is there adequate funding for related research and development (R&D), or policies conducive to private sector innovation and digital adoption. Moreover, there is currently weak public-private dialogue that could facilitate the introduction of laws, regulation and government policies more conducive to digital start-ups. A lack of digital literacy and weak comprehension of the digital ecosystem among policy makers is partially to blame. While the nascent tech ecosystem appears to be working with the ICT Regulator

(ARCT), in trying to influence positive policy change, there is room for expanding dialogue through a more formal and inclusive channels/fora. For example, there appears to be untapped potential for creating entry points for private sector innovation, under pending e-government initiatives. Open APIs and conducive procurement policies could be one way for Government to support the local digital innovation ecosystem. Other areas that Government needs to work on include boosting investor protection, insolvency provisions and contract enforcement, based on the latest DB assessment of Burundi (see Figure 7.3). Other opportunities, such as exploring export markets in areas such as Business Process Outsourcing (BPO), should also be explored. However this again requires a sizable, digitally advanced workforce which does not exist at present, as is detailed in Chapter 4.

Figure 7.3: Doing Business Sub-Index Scores, Burundi 2020




Source: World Bank Doing Business 2020

### 7.2.2.2 *Ecosystem Support & Infrastructure*

**Weak access to affordable and quality broadband, as well as other enabling infrastructure pushes up costs for start-ups and deters investment in digital.** As noted in Chapter 3, poor last-mile access and high relative prices for broadband continue to be prohibitive for the average consumer, including start-ups. Low electricity access adds to this challenge. Notably, Burundi ranked 184th out of 190 in the 2020 DB, in reference to access to electricity. The missing transport and logistics infrastructure are discussed in Section 5.2.6.

**A few incubators exist in Burundi, but BujaHub emerges as the only functional innovation hub dedicated to tech-based innovation and digital entrepreneurship.** It is privately run and receives no support from the government and thus has minimal financial resources. However, it has been able to run a handful of successful and impressive initiatives (see Box 14)[111]. Nevertheless, there is room to improve and expand the quality of existing incubation services, as well as the number of co-working spaces available. The Burundi Business Incubator (BBI) appears to focus predominately on traditional brick-and-mortar businesses.[112] Meanwhile, stakeholder suggest that the franchise Impact Hub is present in Burundi but is under-performing and dormant.[113] A new initiative, called Nawe Nuze (or Solidarity Groups), has also been launched with the help of development partners such as CARE and

[111] See: https://www.bujahub.com/about.php
[112] See: https://www.bbin.bi/
[113] See: https://bujumbura.impacthub.net/

UNICEF, and has facilitated the emergence of numerous youth social enterprises.[114] The absence of local accelerators prevents many start-ups from reaching scale. Overall, Burundi is home to far fewer ecosystem support originations (ESOs) than its regional neighbors (See Annex 4).

**Since 2018, INGOTech hosts Burundi's largest annual event in the digital entrepreneurship space – the 'African Digital Entrepreneurship Summit'.** This event brings together private and public stakeholders and reputable international tech firms like Google, IBM and Facebook. This has recently sparked a new partnership between Facebook and INGOTech that aims to increase digital skills in Burundi, using Facebook Developer Coders Circles. Google has also partnered with INGOTech to launch the 'Digital Skills for Africa' program in Burundi, which aims to equip some 18,000+ young people with digital skills across Burundi, DRC, Tanzania and Uganda.

### Box 14: BujaHub - Burundi's principal digital incubator

**BujaHub is a private non-profit organization**, created as a result of a partnership between the Young African Development Foundation, the Save African Youth Campaign, and Université Polytechnique Intégrée de Cibitoke – all operating in Burundi and focusing on supporting the education and socio-economic development of young men and women in Africa.

**BujaHub provides incubation services to digital startups,** accompanying entrepreneurs in developing a myriad of online platforms, spanning various economic sectors (such as agriculture, commerce, health, transport and education). However, in the absence of a local accelerator the organization has also tried to fill this role, with mixed results. Many of Burundi's existing online platforms are graduates of BujaHub. As of 2018, 15 start-ups had graduated from BujaHub, including Tanganyika Lake Tours (tourism sector), e-health application Abacu (health sector), and Leipa, which facilitates remittances from the diaspora (financial sector). Some five e-commerce platforms have also graduated, including esoko.bi and Wasili. As discussed in Chapter 4, BujaHub also plays an active role in supporting basic and more advanced digital skills training.

**BujaHub also provides support for the digitalization of traditional industries**. The Hub runs bootcamps, hackathons and business development workshops. Last year it launched the Bingo Hackathon challenge, where programmers can support the development of digital business solutions to real world problems faced by local firms, which are subsequently bought by the companies in question and developed further. Experience to date suggests that there is demand among larger business in Burundi, as some 15 companies currently participate in the event. BujaHub has also set up innovation clusters, inter alia targeting agriculture and fisheries.

**While a handful of industry associations exist, none of them focus on the tech sector per se.** These networks could play a larger role in supporting accelerated digital adoption. Examples include the ABEF and RIM in the financial sector, and farmer cooperatives in the agricultural sector.

#### 7.2.2.3 *Financial capital*

**Most access to finance in Burundi is facilitated through loans at traditional banks, yet bank market penetration remains very low.** Burundi ranked 176 out of 190 countries for access to credit in the 2020 DB report.[115] While access to finance is weak in traditional sectors, it is even more limited in the digital sector. Virtually all digital entrepreneurs interviewed were either self-financed or had help from family and friends, reflecting gaps in existing credit infrastructure (noted in the preceding chapter). Most raised concerns that commercial banks are unwilling to lend to digital start-ups, as they are perceived as too risky. Stakeholder interviews also suggested that banks do not fully appreciate

[114] See: https://www.facebook.com/careintbdi/posts/nawe-nuze-care-innovation-hub-has-facilited-the-emergence-of-numerous-youth-soci/2890457067651458/
[115] World Bank (2020). Doing Business report.

digitally enabled business models, and thus unfairly assess risk. High interest rates and the absence of adequate collateral are other barriers.

**There is currently limited to no grant-schemes, venture capital firms or angel networks active in the country, making access to early stage funding a perpetual challenge.** However, stakeholders consulted suggested that this may be changing, as there have been signs of growing interest in Burundian entrepreneurs. BujaHub indicated that they currently work with four angel investors and three organizations (including non-profits and social impact funds), whereas other incubators often lack access to investor networks. The recent success achieved by a handful of Burundi start-ups in tapping into grant-based financing suggests that Burundi is home to ideas worth investing in.

**International donors and private foundations remain the main source of financing for digital entrepreneurs.** The Tony Elumelu Foundation, which is arguably Africa's most competitive digital entrepreneurship grants program, recently awarded grants to five Burundian digital entrepreneurs.[116] Seven out of five projects pitched and obtained seed capital, featuring innovation in agriculture, education, health and ICT sectors.

#### 7.2.2.4 *Markets & Culture*

**A very small digitally savvy consumer base restricts the size of the addressable market for digital entrepreneurs.** Burundi's market is inherently small. This issue is highlighted as a key constraint in Burundi's GCI profile (see Figure 7.4). However, weak digital adoption (discussed in Chapter 3) creates an even smaller market for digital business to tap into, as Burundi continues to have some of the weakest internet adoption rates in the world. Moreover, weak purchasing power, digital literacy and distrust in digital platforms contribute to weak local demand. These constraints make achieving scale and profitability difficult. Leveraging Burundi's access to the wider East African market will thus be critical, as this will allow budding start-ups to quickly scale – the benefits from supporting movement toward a Single Digital Market (SDM) in East Africa are briefly presented in the next in focus section, following the conclusion of this chapter.

Figure 7.4: Burundi's Global Competitiveness Index 2019 Performance Overview


Source: WEF Global Competitiveness Report 2019.

[116] http://akeza.net/6-entrepreneurs-burundais-beneficiaires-du-tony-elumelu-entrepreneurship-programm/

**Stakeholder consultations suggested that there is an emerging culture of entrepreneurship, but the requisite business skills to succeed are lacking**. While risk appetite has traditionally been low in Burundi, burgeoning youth unemployment is encouraging the emergence of new entrepreneurs, grown of necessity rather than a knack for business. Many of these young innovators have had limited exposure to developed markets. Conversely, the vast majority of successful digital entrepreneurs are born out of the Burundian diaspora, who have returned to invest in their country. When interviewed, many indicated that the entrepreneurship culture in Burundi remains conservative.

#### 7.2.2.1 *Human capital*

**The current pipeline of digital talent is discussed at length in Chapter 4.** Local training available limits the supply of advanced digital, which mean that informal training providers such as BujaHub are playing a growing role in nurturing and connecting talent. BujaHub suggests that while Bujumbura is actually home to thousands of talented coders, many of them lack the business skills to succeed in launching a viable business.

**According to the WEF Global Competitiveness Index, Burundi is the African country least able to hold on to its top talent, resulting severe brain drain.** However, as noted above, the Burundi diaspora is also proving to be an asset. This suggested that there is scope to tap into related networks to promote and nurture talent, and potentially support a growing network of diaspora mentors and/or angel investors.

## 7.3 Recommendations & Next Steps

**There is only limited innovation happening in the Burundian entrepreneurship ecosystem.** Incubators such as BujaHub are present, but they have limited resources to attract and support entrepreneurs. Most of the population have had limited exposure to technology, yielding modest demand for digital innovation. Many entrepreneurs are diaspora trying to foster a culture of innovation in Burundi. Weak access to credit, and low quality of connectivity are important barriers that hamper the development of digitally enabled businesses. Potential entrepreneurs are left with homegrown pilot solutions, which often disappear rapidly from the market, or relay on donor funding.

Table 7.2: SWOT analysis on digital entrepreneurship

| Strengths | Weaknesses |
|---|---|
| • **A small group of actors is dedicated to improving conditions** for young Burundian entrepreneurs, by providing access to adequate technologies. These include local and international partners but would benefit from increased support from the Government.<br>• **Some startups manage to create innovative products**, but most initiatives are very early stage and face difficulties to scale up | • There are practically **no dedicated strategies, programs or regulations** to accompany digital transformation in the private sector<br>• **Active players lack the means and resources** to scale up training, incubation and networking of digital startups<br>• The **low user base of electronic devices and digital services** discourages digital innovation<br>• Overall **technology adoption by traditional businesses is low**<br>• **Access to financial capital is low**, with digital entrepreneurs usually perceived as too risky for traditional investors |

| Opportunities | Threats |
|---|---|
| • **Important opportunities in the agriculture** sector to leverage digital technology, which provides 90 percent of jobs<br>• There are **several projects from international partners** such as UNDP, WEF, World Bank and the Dutch Cooperation which can be leveraged | • Burundi has **one of the least business-friendly environments in the world** (166/190 in WB DB, 135/141in WEF GCI)<br>• **Low network coverage in rural areas**, along with **speed issues** and **high cost of data**<br>• **Low skills base** in the population |

**The following recommendations could support the development of digital entrepreneurship in Burundi:**

## Objective 1: Enhance the digital entrepreneurship ecosystem

**R1. Adopt a national digital strategy.** The Government of Burundi should revise its current national development plan to include a holistic digital economy strategy as a key pillar to achieving its national development goals. About 90 percent of the Burundi population is comprised of small-scale farmers; the Government explore and adopt s comprehensive plan for digital technology in agriculture to improve the living standards of this majority group.

**R2. Increase financing instruments to entrepreneurs and address the financing gap.** Given the lack of access to finance and nascency of the ecosystem, the Government of Burundi should consider providing tax incentives for private investors in local startups. Additionally, given the underrepresentation of women in the sector, the government should promote the investment in women digital entrepreneurs.

**R3. Improve key infrastructure constraints.** As noted in Chapter 3, only 2.7 percent of Burundi's population have access to internet, and only 9 percent have access to electricity. The World Bank recently approved a $160 million grant to Burundi to improve access to electricity in rural areas; the government should leverage this opportunity in developing its digital development plan, as well as seeking out other investment opportunities in energy.

**R4. Increase entrepreneurial capacity by investing in ecosystem and education institutions.** The government needs to support innovation hubs, with technical assistance and financing, emphasing early stage financing and mentorship. Addressing the significant gap in digital skills and ICT adoption is crucial; by introducing digital entrepreneurship training into the national education curriculum, and promoting and advertising success stories, the government could incentivize more youth to pursue entrepreneurial ventures, particularly in in high-productivity sectors

## Objective 2: Reform the business environment for improved competition

**R5. Level the playing field for smaller and new market entrants.** The government should not pick sides and offer unfair advantages to select companies. Such practices worsen the business environment and increase the risk portfolio, disincentivizing entrepreneurs and investors to invest into the market. Given its historic political instability, Burundi is already perceived as a high-risk country for investment, thus any additional market risks such as anti-competitive regulatory policies will further discourage private companies to invest in the digital entrepreneurship sector.

## Objective 3: Develop networking platforms for all stakeholders to engage in

**R6. Create a public-private sector dialogue platform.** It will be paramount to engage with all relevant stakeholders before adopting or implementing key policies. The Government should identify and engage these stakeholders using a formal platform for dialogue that includes private sector digital players, startup representatives, relevant line ministries, development partners, as well as relevant civil society organizations. Such a holistic approach will lead to more informed decision making and policy related to digital entrepreneurship.

**R7. Identify and partner up with local digital champions.** Burundi has had limited number of successful digital entrepreneurs. Thus far, most of these entrepreneurs have received no support from the government. The Government of Burundi should first identify these champions, and then work to provide support and incentives for them to flourish.

**R8. Increase market integration with regional actors and outreach to Burundian diaspora.** Given the small size of the domestic market, attracting regional players to Burundi could increase access to business opportunities, financing and mentorship for Burundian entrepreneurs. There is scope to build on the Burundi diaspora to support potential champions and start nurturing networks of business angels. Opportunities within the East African Single Digital Market are further explored in the In-Focus Section 3 below.

# In Focus 3: Single Digital Market for East Africa

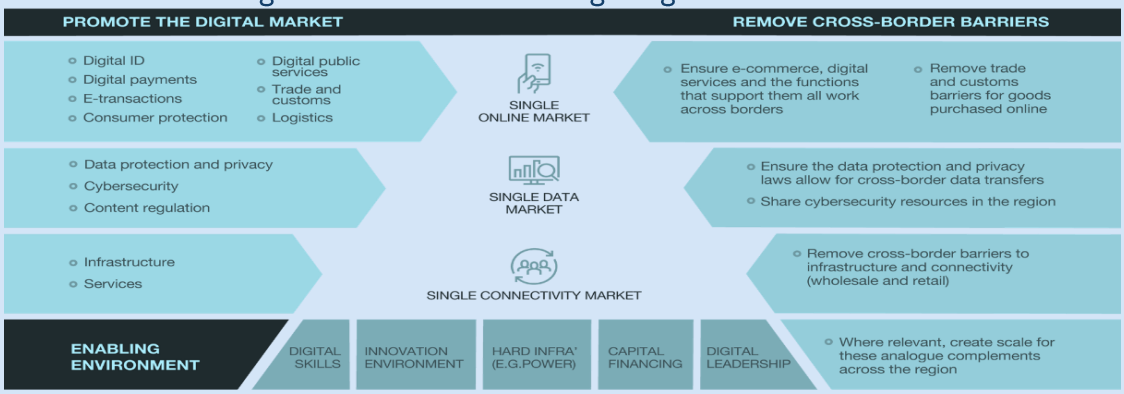
**A Single Digital Market (SDM) in East African could allow the region to become a more deeply integrated and dynamic digital investment, innovation and trade hub.** Many countries in the region are too small to succeed in the digital economy in isolation. They need economies of scale and the network effects offered by a larger regional market to help bridge the digital divide faster both within their respective countries and the region. An SDM could accelerate the growth of technology-enabled businesses, lower the cost of key telecom services, and catalyze new digital services for citizens and businesses alike. It could help tackle many of the key constraints that East African countries face today, including the small size of domestic markets and dependence on coastal neighbors to carry internet connectivity. Despite the integration efforts in the region, and Burundi's intention to participate in an SDM, the country has not yet made gains in this area.

**Given its small market size, Burundi will need to be at the forefront of efforts to create a larger, more integrated digital market in East Africa and beyond.** Creating a larger regional market will help decrease the costs of digital services for local consumers and create room for Burundian digitally enabled firms to quickly scale. An integrated East African digital market would be the ninth largest in the world, based on population, creating the 'domestic' market size needed to attract digital investment and provide a larger and more familiar space for local firms to grow before having to compete in global markets. It will provide the region with the heft to compete against digital giants on the continent such as Nigeria, and ultimately to contend with the globally dominant digital hubs.
Research undertaken suggests that implementing an SDM in East Africa would create an additional US$1 to US$2.6 billion boost in GDP and between 1.6 to 4.5 million new jobs across the region.

**An SDM for East Africa is defined as one in which cross-border barriers to providing and accessing digital infrastructure, content, and services are eliminated.** A seamless and competitive regional digital ecosystem would drive a reinforcing cycle of economic growth, investment, innovation, job creation, and improved service delivery. Achieving an SDM will require simultaneously supporting domestic development, and cross-border integration of the following submarket structures, which form distinct yet interconnected layers of the overall SDM. These include the following:

- **A single connectivity market**, removing barriers to regional telecom infrastructure and services deployment to encourage investment, improve performance, eliminate pricing and quality differentials between coastal and landlocked countries while simultaneously expanding connectivity access to all.
- **A single data market**, enabling secure exchange, storage, and processing of data across borders; support regional deployment of data infrastructure; and drive supply and demand for data-driven services and innovation across the region.
- **A single online market**, allowing firms, governments, and citizens to access and deliver both public and private services online; undertake e-commerce transactions; and access digital content and information seamlessly from anywhere in the region.

In-Focus Figure 1: Framework for Single Digital Market in East Africa



Source: World Bank (2019). *A Single Digital Market for East Africa: Presenting Vision, Strategic Framework, Implementation Roadmap, and Impact Assessment.*

# 8 Conclusion: The way forward

**The Government of Burundi has set itself ambitious development objectives, identifying digital technology as a central pillar in transforming its economy and reducing poverty.** While the country has made progress in expanding access to digital infrastructure and enabling growth in DFS, much remains to be done in order to bring about an innovation ecosystem that translates into growth and job creation. The nascent stage of Burundi's digital economy is reflected in low rates of digital adoption, a significant rural-urban digital divide and a lack of an overarching and cohesive digital strategy.

### ❖ Increasing digital adoption remains the most pressing priority in Burundi.

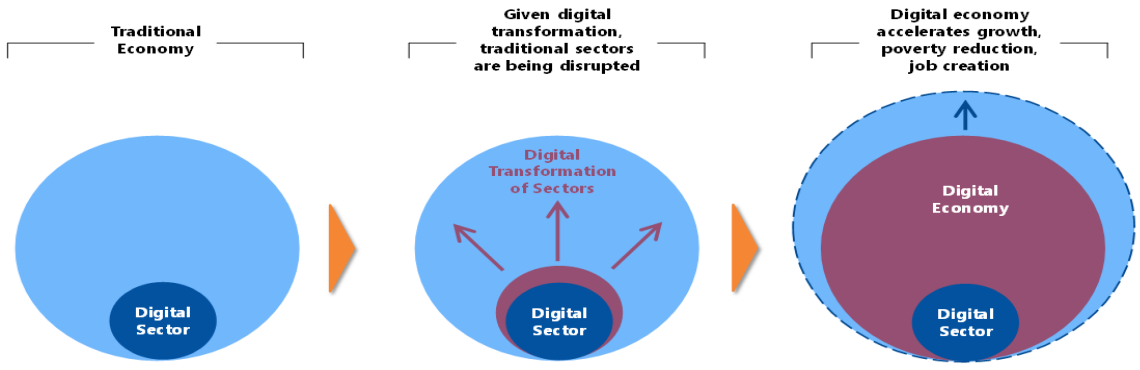
**Increasing digital adoption and usage must be a priority for the Government – ensuring that no one is left behind.** On the supply side, investment in Burundi's middle mile has created a solid base to build on, but gaps in last-mile access still prevent rural communities from coming online. Moving forward, emphasis needs to be placed on expanding last-mile access. Low demand also limits market development, meaning that interventions that help stimulate the growing demand are needed. This is likely to require a multi-pronged approach that tackles both the affordability and skills barriers etc. However, a concerted effort on regulation is also needed to ensure the local broadband market is far more competitive than today– this will require removing key bottlenecks such as existing gateways and competition issues in key market segments – in favor of affordable, accessible and quality broadband services.

**Burundi's youth bulge needs to be equipped with the right skills to get online.** More needs to be done to embed digital skills in the formal education system in Burundi. While this may take time, Government should start by incrementally putting the requisite enablers in place – creating a clear skills framework, curriculum, training teachers and boosting access to needed infrastructure and devices. There is also scope to expand and improve existing IT courses available at TVET and HEIs. In tandem, innovative approaches should be used to expand opportunities for digital skills training, by crowding in industry players, private sector providers, and development partners.

### ❖ Burundi's digital economy remains nascent

**The digital sector is yet to support the transformation of traditional sectors, given weak digital adoption by government and the agricultural sector.** Poor digital adoption by consumers and key sectors, such as agriculture, means that digital technology is yet to have a transformational impact on Burundi's economy. Moving forward, digital skills and ICT-driven innovation will be instrumental in supporting productivity gains across both primary and non-primary sectors and creating off-farm jobs in Burundi. Figure 8.1 summarizes Burundi's envisaged transition to a digital economy.

Figure 8.1: Development stages of the digital transformation



### ❖ Burundi would benefit from continued investments in key digital foundations

**To date, most progress has been made under the pillars of digital infrastructure and digital financial services.** While there is still work required to enhance these pillars further and consolidate progress made to date, increasing attention also needs to be paid to the other key elements of the digital economy ecosystem. For example, Government still lacks many of the foundational elements needed to scale up its e-government capability, including shared infrastructure, services and growing technical capacity. Increasing government's use of digital could, in turn, help fuel infrastructure expansion by creating an anchor tenant and predicable demand for digital services. A Government push to digitize Burundi's agricultural sector could create growing entry points and opportunities for digital entrepreneurs in Agtech, fueling the expansion of e-commerce and fintech.

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# Annex 1: Key indicators

| Pillar | Overall performance | Key indicators | | | |
|---|---|---|---|---|---|
| Digital infrastructure |  | **Indicator** | **Source and date** | **Burundi** | **SSA average** |
| | | Internet Usage, % | ITU, 2017 | 2.7 | 24.1 |
| | | Unique mobile Cell. Subscription, % | GSMA, 2020 | 38.7 | 48.2[a] |
| | | Unique mobile BB Subscriptions, % | GSMA, 2020 | 11.9 | 26.7[a] |
| | | Price of mobile broadband 1GB, % of GNIPC | A4AI, 2019 | 13.6 | 7.8 |
| Digital skills |  | **Indicator** | **Source and date** | **Burundi** | **SSA average** |
| | | Primary schools equipped with electricity, % | UNESCO, 2018 | 8.4 | 39.8 |
| | | High schools equipped with internet, % | UNESCO, 2017 | 0.7 | - |
| | | Human Capital Index, /100 | WEF, 2017 | 55.5 | 53.0 |
| Digital platforms |  | **Indicator** | **Source and date** | **Burundi** | **SSA average** |
| | | Digital Adoption Index, Government cluster, /100 | WB, 2016 | 41.9 | 39.5 |
| | | ID coverage, % | WB, 2018 | 73 | 66.2 |
| | | E-participation Index, /100 | UNDESA, 2018 | 30.9 | 34.5 |
| | | Statistical Capacity Score, /100 | WB, 2019 | 67.8 | 59.1 |
| | | B2C E-commerce Index, /100 | UNCTAD, 2019 | 9.0 | 29.0 |
| Digital financial services |  | **Indicator** | **Source and date** | **Burundi** | **SSA average** |
| | | Adults with a bank account, % | WB, 2014 | 6.9 | 24.6 |
| | | Adults with a mobile money account, % | WB, 2014 | 0.7 | 11.7 |
| | | Adults using digital payment, % | WB, 2014 | 4.1 | 22.7 |
| | | Agricultural payments made via digital channels, % of agricultural payments receivers | WB, 2014 | 2.9 | 11.3 |
| Digital entrepreneurship |  | **Indicator** | **Source and date** | **Burundi** | **SSA average** |
| | | Ease of doing business score, /100 | WB, 2020 | 46.8 | 51.8 |
| | | ICT adoption index, /100 | WEF, 2018 | 18.4 | 29.6 |
| | | Global Innovation Index, /100 | WIPO, 2019 | 17.6 | 24.3 |

[a] The source of the SSA average is ITU (2017).

# Annex 2: Overview of Recommendations

| Governance of the Digital Economy | | | |
|---|---|---|---|
| **Action** | **Responsible Agency** | **Time Frame** | **Priority** |
| Objective 1: Integrate and operationalize existing strategies | | | |
| Adopt a new overarching strategic vision for the digital economy. | SETIC | Short | High |
| Ensure that the strategy is supported by SMART (specific, measurable, actionable, relevant and time-bound) action plans. | SETIC | Short | High |
| Objective 2: Strengthen institutional coordination as a whole-of-government | | | |
| Clarify institutional mandates. | MoYPICT | Short | High |
| Support greater inter-ministerial coordination. | SETIC | Short | High |
| Support a platform for ecosystem and donor coordination. | SETIC | Short | High |
| Objective 3: Provide foundational laws and regulations for the digital economy | | | |
| Adopt a suite of foundation cyber laws, aligned with global best practice and regional frameworks. | MoYPICT | Medium | High |
| Strengthen the capacity of the Regulator and MoYPICT. | SETIC | Short | High |

| Digital Infrastructure | | | |
|---|---|---|---|
| **Action** | **Responsible Agency** | **Time Frame** | **Priority** |
| Objective 1: improve access to existing infrastructure and invest in new networks | | | |
| Liberalize access to the landing station, curb the emerging monopoly of BBS and lift restrictions on internet service providers (ISPs). | ARCT | Short | High |
| Focus on extending connectivity to key white spaces in the middle-mile segment. | ARCT | Short | High |
| Facilitate deployment of infrastructure through ramp-up of high-capacity FTTP and build-out of associated infrastructure. | ARCT | Medium | High |
| Objective 2: boost demand through initiatives on affordability, purchasing power and awareness | | | |
| Increase service affordability by lowering prices, innovating in pricing and partnerships models. | BBS | Short | High |
| Increase purchasing power of the bottom of the population, which hold the greatest for increasing penetration. | MoYPICT | Short | High |
| Increase awareness and availability of digital solutions. | SETIC | Short | High |
| Increase demand clusters and supporting content and services. | SETIC | Short | High |
| Objective 3: Strengthen capacity for regulation of data protection and cybersecurity | | | |
| Update the legal framework. | ARCT | Medium | Intermediate |
| Review multiple taxation issues by setting up an Industry Working Group. | ARCT | Medium | High |

| | | | |
|---|---|---|---|
| Ensure capacity building for the industry regulator ARCT. | SETIC | Short | High |
| Strengthen inter-ministerial coordination with the Executive Secretariat for Telecommunications, Information and Communications. | MoYPICT | Short | High |

| Digital Skills | | | |
|---|---|---|---|
| **Action** | **Responsible Agency** | **Time Frame** | **Priority** |
| Objective 1: Build the foundations for digital skills development in the formal education system | | | |
| Establish a national framework for digital skills | SETIC | Short | High |
| Refine the digital skills curriculum over time. | Ministry of Education | Short | High |
| Create an inter-ministerial forum to ensure that critical enablers are in place. | SETIC | Medium | High |
| Increase dialogue with the private sector. | SETIC | Medium | High |
| Equip schools and HEI with the requisite infrastructure and IT equipment. | Ministry of Education | Short | High |
| Equip teachers with the requisite skills to delivery digital skills training. | Ministry of Education | Short | High |
| Ensure adequate technical support for teachers. | Ministry of Education | Short | High |
| Improve quality of STEM education. | National Commission on STI | Medium | High |
| Improve completion and transition rates to secondary education. | Ministry of Education | Short | Intermediate |
| Objective 2: Align digital skills supply and demand | | | |
| Collect and maintain up-to-date information on digital skills and labor markets. | National Office for Employment and the Labor Force | Medium | Intermediate |
| Asses the quality of existing digital skill programs. | SETIC | Medium | Intermediate |
| Objective 3: Foster better collaboration with key stakeholder to expand non-traditional and innovative approaches to digital skills development | | | |
| Engage all relevant national and international stakeholders in digital skills agenda. | Ministry of Education | Short | High |
| Crowd-in more private sector education providers. | Ministry of Education | Short | Intermediate |

| Digital Platforms | | | |
|---|---|---|---|
| **Action** | **Responsible Agency** | **Time Frame** | **Priority** |
| Objective 1: Improve the legal, policy and regulatory environment for digital platforms | | | |
| Develop a separate, user-driven and costed e-Government Strategy with prioritized objectives. | MoYPICT | Short | High |
| Align with and build on the legal and policy regime of the EAC on data governance, e-Government, competition and intellectual property. | MoYPICT | Short | High |
| In the short term, develop a decree with the main purpose of creating an Authority body that will be responsible for setting up and managing the Burundian National Identification System. | Ministry of Interior | Short | High |

| Objective 2: strengthen key stakeholders in the governance of digital transformation | | | |
|---|---|---|---|
| Strengthen and enforce the mandate of SETIC and institutional coordination for implementation. | MoYPICT | Short | High |
| Promote capacity transfers from the international and regional private sector and mobilize line managers. | SETIC | Medium | Intermediate |
| Promote digital literacy and a citizen-centric approach to design and implementation. | SETIC | Short | High |
| Set up incentives structure that encourage the country's telecom operators to engage with MSMEs and digital platform stakeholders. | ARCT | Short | High |
| Objective 3: build the technical standards and foundations for digital platforms | | | |
| Invest in interconnectivity. | ARCT | Medium | High |
| Develop technical standards for data management and interoperability frameworks. | ARCT | Short | High |
| Secure resources for the implementation of digital ID systems. | Ministry of Interior | Short | High |
| Prioritize the development of a digital identity and electronic signatures ecosystem – with the aim of rolling-out a system that is aligned with global best practice and recognized regionally. | MoYPICT | Short | High |
| Improving the Cybersecurity Institutional Framework by reducing fragmentation, promoting clear mandates and building capacity of relevant agencies. | SETIC | Medium | High |

| Digital Financial Services | | | |
|---|---|---|---|
| **Action** | **Responsible Agency** | **Time Frame** | **Priority** |
| Objective 1: Stimulate demand for DFS and further product development | | | |
| Explore scope for expanding G2P and P2G. | MoYPICT | Medium | Intermediate |
| Digitize payments along agricultural value chains | SETIC | Medium | High |
| Improve customer education and understanding of DFS. | SETIC | Short | High |
| Objective 2: build the infrastructure for digital financial services | | | |
| Set up a National Payments Advisory Council to drive market-wide interoperability. | BRB | Medium | Intermediate |
| Develop a modern ID system. | Ministry of Interior | Short | High |
| Develop a modern credit reporting system | BRB | Medium | Intermediate |
| Objective 3: Boost capacity and access to data in the financial sector | | | |
| Improve the supervisory capacity for the BRB. | SETIC | Medium | Intermediate |
| Partner with FIs to improve capacity. | BRB | Short | High |
| Build capacity to accelerated implementation of the BI-Switch and ATS. | BRB | Short | High |
| Address lingering regulatory gaps and legal ambiguity. | BRB | Medium | Intermediate |
| Bridge existing data gaps. | BRB | Medium | Intermediate |
| Improve the investment climate. | ARCT | Short | High |

| Digital Entrepreneurship | | | |
|---|---|---|---|
| **Action** | **Responsible Agency** | **Time Frame** | **Priority** |
| Objective 1: Enhance the digital entrepreneurship ecosystem | | | |
| Adopt a national digital strategy. | MoYPICT / SETIC | Short | High |
| Increase financing instruments to entrepreneurs and address the financing gap. | MoYPICT | Short | High |
| Improve key infrastructure constraints. | MoYPICT | Short | High |
| Increase entrepreneurial capacity by investing in ecosystem and education institutions. | MoYPICT | Short | High |
| Objective 2: Reform the business environment for improved competition | | | |
| Level the playing field for smaller and new market entrants. | MoYPICT | Medium | High |
| Objective 3: Develop networking platforms for all stakeholders to engage in | | | |
| Create a public-private sector dialogue platform. | SETIC | Medium | Intermediate |
| Identify and partner up with local digital champions. | ARCT | Short | High |
| Increase market integration with regional actors and outreach to Burundian diaspora. | MoYPICT | Medium | Intermediate |

# Annex 3: Summary of Digital Competences

Figure A4: Summary of Digital Competences, based on EU DigComp 2.1 and Digital Literacy Global Framework (DLGF)

| Competence Areas | Competences | Proficiency Levels |
|---|---|---|
| 1. Devices and software operation a | Identify and use hardware and software tools and technologies. | *Foundation* (Levels 1 and 2) - Can deal with simple tasks that involve remembering content and instructions but also requires some guidance to execute. |
| | 2 competences involving physical and software operations of digital devices. | |
| 2. Information and data literacy | Search for, judge the relevance (including its source) and organize digital content. | |
| | 3 competences involving browsing, evaluating, and managing digital content. | |
| 3. Communication and collaboration | Interact and engage in citizenship through digital technologies while adhering to netiquette and managing one's digital identity. | *Intermediate* (Levels 3 and 4) - Can independently deal with well-defined, routine and nonroutine problems that involve understanding content. |
| | 6 competences involving communicating, collaborating, and engaging in citizenship through digital technologies as well as netiquette and digital identity management. | |
| 4. Digital content creation | Create new or modify existing digital content while correctly applying copyright and licenses as well as programming. | |
| | 4 competences involving developing and integrating digital content as well as understanding copyrights, licenses, and programming. | |
| 5. Safety | Ensure security measures while safeguarding against risks threatening devices, privacy, health, and the environment. | *Advanced* (Levels 5 and 6) - Can deal with and provide guidance to others on different tasks and problems that involve applying and evaluating content in complex situations |
| | 4 competences involving protecting devices, personal data, privacy, and health as well as the environment. | |
| 6. Problem-solving | Solve problems in digital environments and use digital tools to innovate and keep abreast of the digital evolution. | |
| | 5 competences involving resolving digital issues, creatively using digital technologies, bridging personal gaps in digital skills as well as computational thinking. | |
| 7. Career-related competences* | Use specific career-related digital technologies and content to have access to opportunities in the digital economy. | *Highly specialized* (Levels 6 and 7) - Can resolve complex problems with few or several moving pieces, guide others, contribute to professional practice and propose new ideas to the field. |
| | 2 competences involving operating specialized digital technologies as well as working with digital content for specific career-related fields. | |

*Source*: Based on Carretero *et al.* 2017, and UIS 2018.
*Note*: a. Proposed by UIS as additions to the DigComp 2.0 framework, which was subsequently updated to DigComp 2.1.

# Annex 4: Mapping of African TechHubs

The latest collaborative effort by Briter Bridges and the GSMA Ecosystem Accelerator program, identifies 618 active tech hubs, as of July 2019.