Rwanda Economic Update

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Accelerating Digital Transformation in Rwanda

WORLD BANK GROUP

Rwanda Economic Update

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ACRONYMS

ATM	Automatic Teller Machine
B2C	Business-to-Consumer
BNR	National Bank of Rwanda
DAP	Digital Ambassadors Program
DFS	Digital Financial Services
EAC	East African Community
EMDEs	Emerging Markets and Developing Economies
FSP	Financial Service Provider
FY	Fiscal Year
GDP	Gross Domestic Product
ICT	Information, Communications, and Technology
ID	Identification
IMF	International Monetary Fund
KTRN	Korean Telecom Rwanda Networks
MINECOFIN	Ministry of Finance and Economic Planning
MNO	Mobile Network Operator
MSMEs	Micro Small and Medium Size Enterprises
NAEB	National Agricultural Export Development Board
NISR	National Institute of Statistics of Rwanda
NPLs	Nonperforming Loans
NST	National Strategy for Transformation
P2P	Person-to-Person
PKO	Peace-Keeping Operations
PP	Percentage Points
PPP	Public-Private Partnership
REPO	Repurchase Agreement Operations
REU	Rwanda Economic Update
RMB	Rwanda Mines, Petroleum and Gas Board
RRA	Rwanda Revenue Authority
RURA	Rwanda Utilities Regulatory Authority
Rwf	Rwandan Franc
SSA	Sub-Saharan Africa
TTL	Task Team Leader
TVET	Technical and Vocational Education and Training
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
US$	United States Dollar
WEF	World Economic Forum
Y-O-Y	Year-on-Year

FOREWORD

The Rwanda Economic Update (REU), published twice a year, analyzes recent economic developments and prospects and Rwanda's policy priorities. It is intended for a wide audience of policymakers, business leaders, other market participants, analysts of Rwanda's economy, and civil society. The REU draws on data reported by the Government of Rwanda and additional information collected by the World Bank Group in its regular economic monitoring and policy dialogue. The REU team is grateful to the Ministry of Finance and Planning, the National Statistics Institute of Rwanda, and the National Bank of Rwanda for their helpful cooperation.

Each issue also has a special feature spotlighting a particular topic, in this case Rwanda's digital economy; it discusses the country's digital transformation journey to date and identifies policy challenges and proposes key policy options to support continued growth of the sector. The current REU, the 15th, was prepared by the World Bank Group Rwanda team, the Macroeconomics, Trade and Investment Global Practice, and the Digital Development Department. The report was drafted by Aghassi Mkrtchyan (Senior Economist, TTL), Peace Aimee Niyibizi (Economist, co-TTL), Casey Torgusson (Senior Digital Development Specialist), and Isabella Hayward (Digital Development Specialist). The work was guided by Abebe Adugna Dadi (Practice Manager, Macroeconomics, Trade, and Investment), Michel Rogy (Practice Manager, Digital Development Africa and Middle East), Felipe Jaramillo (Country Director for Kenya, Rwanda, Uganda, and Eritrea), and Yasser El-Gammal (Country Manager, Rwanda).

The team is grateful to Naoko C. Kojo (Senior Economist, EMFTX), Tim Kelly (Lead Digital Development Specialist, IDDO2), Caroline Chepkorir Koech (Digital Development Specialist, IDDO2) and Philip Schuler (Lead Economist, EA1M1 for their comments and advice on earlier drafts. The team benefitted from support from Nancy Umwiza (Office Assistant) for providing logistical support, Rogers Kayihura (Communication Officer) for managing communication and dissemination, and Robert Waiharo for design and layout of the report. We are also grateful to Anne Grant for editorial support.

Views expressed in the REU are those of the authors and do not necessarily reflect the views of the World Bank Group, its Executive Directors, the countries they represent, or the Government of Rwanda.

EXECUTIVE SUMMARY

Recent Economic Developments and Outlook

In the first three quarters of 2019, Rwanda's growth continued to accelerate supported by strong investment. The economy expanded by 10.9 percent in the first nine months of 2019 compared to 8.2 percent growth in the same period of 2018. Fiscal expansion through public investment pursuant to the National Strategy for Transformation (NST1) was much wider than expected playing a key role. Non-government sector investment, including private investment, also contributed to this acceleration. Credit to the private sector picked up, especially in the manufacturing sector which experienced double-digit growth for the second consecutive year. Fiscal expansion and strong domestic demand have led to widening of Rwanda's external imbalances deteriorated. Rwanda continues to rely largely on concessional financing of the deficit and its tight monetary discipline reduces the risks associated with fiscal expansion.

On the production side, construction grew fastest in 2019. Supported by investment, construction activities expanded by nearly 31 percent in the first three quarters of 2019; services expanded by 10.7 percent; and manufacturing by 12.3 percent. Agricultural growth was 5.8 percent. On the demand side, growth was supported by domestic demand fueled by fiscal expansion. In the first three quarters of 2019, government consumption and investments grew by more than 25 percent. Private consumption grew 8.5 percent. The contribution of net exports to growth was again negative—exports were less than expected and demand for imported goods, especially capital goods, was strong.

The fiscal expansion that Rwanda embarked on in FY2018/19 to implement the NST1 has been wider than expected. On an accrual basis, the deficit reached 6.4 percent of GDP in FY 2018/19, against the 5.2 percent projected. Capital spending and net lending grew by 25.4 percent, reaching about 15 percent of GDP—the highest level since FY2015/16. Total revenues reached 24 percent of GDP; solid tax revenues were offset by the shortfall in external grants. By the end of FY2018/19, payment delays amounting to 0.6 percent of GDP were accumulated. The overall deficit for the calendar year 2019 is expected to reach 8 percent of GDP.

External imbalances are widening, reflecting on the one hand wider fiscal deficits and heavy demand for imports and on the other weaker than expected exports. The impressive growth in goods exports in 2017 proved to be a one-off phenomenon; in US dollar terms, since 2018 the growth rate of exports has slowed, and the trend continued into 2019. International prices for the commodities Rwanda exports were low, and export volumes of coffee, tea, and minerals stagnated or declined. Imports grew by 19 percent in US dollar terms in H1, driven by capital and intermediate goods. In the 12 months ending in June 2019, the current account deficit (CAD) widened to 8.9 percent of GDP. The surge in import demand has put pressures on foreign exchange reserves.

Credit growth is accelerating, supported by a positive growth outlook, accommodative macroeconomic policies, and improved financial sector balance sheets. Bank balance sheets improved substantially in 2018-19 as the BNR launched a new regulation on credit classification and provisioning. Having peaked at more than 8 percent in 2017, nonperforming loans (NPLs) fell to 5.3 percent of total loans in September 2019; this reduced risks in the financial system and helped to accelerate credit growth to 20.1 percent, compared to 8.2 percent average annual growth in 2017–18. The banking sector continues to be well-capitalized.

This edition's forecast of Rwanda's economic growth for 2019 is revised upward from the 7.8 percent projected in the REU14 to 8.5 percent. The stronger growth is driven mostly by the unexpected magnitude of the fiscal expansion. Medium-term growth also looks strong with annual growth projected to be about 8 percent. Although the current public investment push will continue in the medium-term, this issue's high growth scenario assumes that the role of the private sector in investment will grow; public investments alone may not sustain growth at 8 percent over the medium-term.

The medium-term outlook assumes that debt will accumulate faster than was projected in REU14. The primary explanation is the large fiscal expansion of 2019. Fiscal deficit for 2020 will continue to be well above the historical average. Despite the increasing indebtedness, reliance on concessional financing will help keep Rwanda's debt sustainable. In the medium term, the CAD will again stay high, hitting 10 percent of GDP. Monetary policy will remain accommodative, although with the return of inflation to the "normal" range and continuing pressures on the exchange rate and reserves, the policy space has narrowed.

The risks to Rwanda's economic outlook, both domestic and external, have risen. The main risk is the growing reliance on public-sector-led investments. Fiscal expansion to achieve the government's targets for expanding access to infrastructure raises the debt, widens external imbalances, and may crowd out access of the private sector to finance, thus undermining long-term growth. If the reliance on the public sector persists, Rwanda may have difficulties in financing its growth model. Rwanda's commitment to concessional borrowing and monetary stability reduces the risks to macroeconomic stability, but overall fiscal risks has gone up because of the reliance on the public sector for achieving NST1 growth targets.

Despite continuing efforts, the ineffectiveness of the private sector remains a major risk to Rwanda's growth outlook--growth projections for the medium to long term depend on the ability of the private sector to take the lead. As the fiscal expansion for NST1 subsides in the medium term, it will become increasingly difficult to keep the growth rate at 8 percent without increased private sector investment. Now, to achieve sustainable and productivity-led growth, attention must turn to improving allocation of economic resources through better market functioning.

There are also weather-related and external risks. The baseline projections assume normal rain patterns over the medium term, but Rwanda remains vulnerable to climatic shocks like drought or erratic rains. Externally, the main risk relates to a more severe slowdown in global economic growth than is currently expected and to persisting regional tensions. A disappointing global economy will depress prices for the commodities Rwanda exports. The risk of capital outflows from EMDEs in search of safer havens has also increased. Rwanda's economic prospects can also be affected if regional tensions persist—or intensify.

Special Focus: Digitalizing Rwanda

The special focus topic reviews the key building blocks of Rwanda's digital economy and identifies key progress made so far and challenges that lie ahead.

Despite its small size, Rwanda has distinguished itself as a country that has "bet big" on digitization, as means to accelerate growth and reduce poverty. The National Strategy of Transformation (NST1) recognizes ICT as a cross-cutting enabler for development. Greater digital adoption and ICT-driven innovation is seen as instrumental to supporting productivity gains across both primary and non-primary sectors. Meanwhile, use of digital tools and platform can help spawn growth in services (financial, hospitality), expand access to

new markets through e-commerce, as well as offer a range of benefit to users, including means to enhance household income-generation. Government has adopted an ambitious digital agenda articulated by a suite of five-year strategies to support the progressive roll-out of digital infrastructure, public e-service, increase digital skills and position Rwanda as a regional ICT hub, underpinned by strong government institutions and leadership.

Rwanda's digital development thus far has been characterized by a substantial public investment push, in areas such as digital infrastructure and digital public service delivery. This has helped the country achieve some of the highest 3G and 4G network coverage rates on the continent, bringing virtually all Rwandans within range of mobile broadband. Expansion of government's e-service offering as well as enabling regulatory reform, has helped Rwanda emerge as a top African performer in both global 'e-government' and 'doing business' rankings. Moreover, government has launched a series of innovative partnerships to expand digital literacy and create support infrastructure for tech-based start-ups. Nevertheless, moving forward concerted efforts will be needed in the following five areas, to sustain further digitization of the wider Rwandan economy:

Firstly, digital adoption still needs to improve on the back on further interventions that help increase affordability and remove other barriers to uptake, creating greater local demand for digital services. Accelerating digital transformation will only be possible if more users are brought online and become 'digitally enabled' through greater access to digital devices and connectivity. However, presently, domestic demand for digital tools and services remains muted, which in turn adversely impacts the expansion if new digital platforms. While uptake of mobile devices, basic mobile communications and digital financial services has been steadily increasing, there is a lingering digital divide in terms of access to handsets and uptake of high-speed internet services. Broadband remains unaffordable to the average consumer, and Rwanda thus trails its peers in terms of broadband penetration and usage, as well as uptake of foundational digital services such as mobile money.

Secondly, Rwanda needs to invest more in human capital to build the nation's digital skills base, leveraging both traditional and non-traditional approaches. A large basic digital literacy gap still prevents a sizable part of the population from adopting digital technology altogether. Efforts to build basic digital skills will need to be paired with interventions that also boost the perceived value of broadband and other e-services to bring more Rwandans online. Building the nation's digital skills base, beyond basic digital literacy, will be key to digitally-enabled innovation as well as supporting access to new jobs in new sectors. The need for intermediate digital skills is likely to become ubiquitous for formal sector employment. Ultimately, boosting the nation's digital skills base will require interventions and innovative partnerships that go beyond fixing gaps in the delivery of digital skills through the basic education system. Here, Rwanda has already been at the forefront of piloting new schemes – yet, these need to scale to have impact, and there is scope to do more to crowd-in the private sector in support of related interventions.

Thirdly, more private sector led digital economy growth needs to be encouraged, starting with greater digital adoption among MSMEs. As noted above, a large part of the country's digital development to date has been driven by substantial public sector investment and government adoption of 'digital'. While further public investment in the expansions of key enabling public e-services and digital skills will be needed moving forward, the private sector will need to play a far greater role in spearheading digitization to sustain growth momentum, through both increased technology adoption and support for innovation that can enhance productivity and create new off-farm jobs.

While ICT emerges as the fastest growing sub-sector, digital transformation is yet to permeate key sectors such as agriculture, and adoption of digital tools and services among MSMEs has largely been muted. Greater digital adoption among MSMEs could help support both growth in local e-commerce and facilitate greater export. However, like the wider private sector, Rwanda's digital entrepreneurship ecosystem remains nascent, and while investment in tech-based startups is on the rise, there is limited support for these firms beyond a certain growth stage and a weak pipeline of tech start-ups poised for expansion. Meanwhile, weak local demand for digital services has a dampening effect on digital entrepreneurship, where Rwanda's small market size emerges as a major deterrent to private sector investment in digital innovation, despite Rwanda's favorable 'doing business' rating.

Rwanda thus needs to be at the forefront of efforts to create a regional single digital market. Rwanda needs the scale of a larger integrated digital market to succeed in the digital economy and for its tech-based start-up to thrive. Economies of scale not only help bring down prices for consumers but make Rwanda a more attractive investment destination, where Rwanda would be well-positioned to offer an attractive launch-pad for companies targeting the East African market, as Rwanda is widely considered to be an easy place to start a business. Regional market integrations will require efforts to harmonize legislation that help foster a single connectivity, data and digital services market.

Finally, as digital adoption increases, building a more secure online and 'trust' environment will be key to creating a virtuous cycle of increasing digital adoption and demand for digital platforms and services. Rwanda needs to build on its robust foundational identification system to offer a next generation digital ID, providing a critical platform for enabling safe online transactions. There is still also scope to expand Rwanda's cybersecurity capacities, increasing local capacity to prevent, detect, respond and mitigate emerging cyber threats, leveraging greater regional collaboration. A more robust yet measured data protection and privacy regime is also required, which protects users yet still enables data to be stored and shared across borders, enabling greater digital market integration.

PART ONE

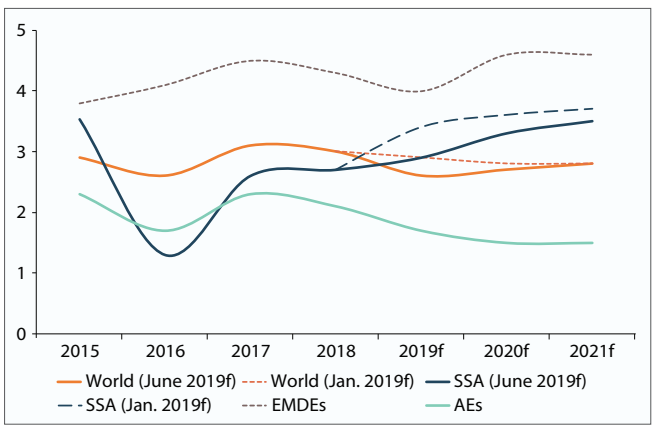
RECENT ECONOMIC DEVELOPMENTS

1.1. Global Growth Momentum has Faltered

The 2019 global economic environment is less favorable for developing countries. In 2019 H1, global economic activity softened because of trade tensions, the prolonged uncertainty about Brexit and a weakening of financial market sentiment because of high and rising debt in emerging markets and developing economies (EMDEs). These events have weighed on global industrial activity and the goods trade. Activity in major advanced economies—particularly in the Euro Area—has been less than expected, holding back activities in China and some other large developing economies. Moreover, heightening trade tensions are increasingly undermining prices of coffee, tea, and tin, Rwanda's main export products (Figure 1.2). That is why the World Bank's *Global Economic Prospects* (June 2019) has downgraded global growth to 2.6 percent, which is 0.3 percentage point (pp) below previous forecasts and its slowest pace since 2016 (Figure 1.1). Growth in advanced economies was also downgraded, from 2.1 to 1.7 percent for 2019. In fact, the report downgraded 2019 growth forecasts for more than 40 percent of countries. However, global GDP is projected to pick up to 2.7 percent in 2020 and 2.8 percent in 2021.

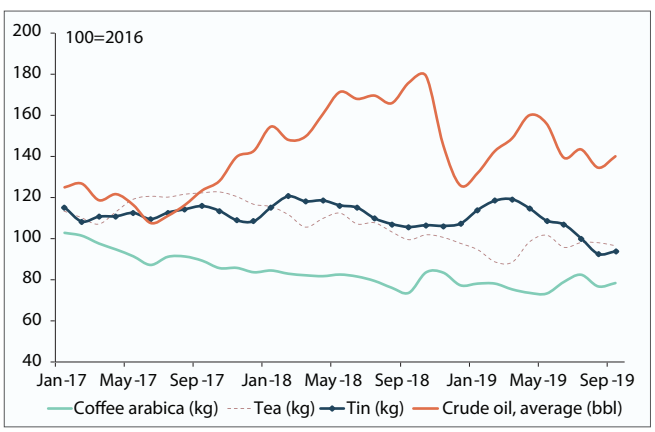
Recovery in growth in Sub-Saharan Africa will to be slower than was expected at the start of the year. The growth outlook is hampered by persistent uncertainty in the global economy and the slow pace of domestic reforms, as noted in the 20th edition of Africa's Pulse of October 2019. Overall growth in Sub-Saharan Africa is projected to rise to 2.6 percent in 2019 from 2.5 percent in 2018, which is 0.2 percentage points lower than the April forecast (Figure 1.1). There is significant divergence in performance between resource-intensive and non-resource-intensive countries in SSA. Among the latter, fixed investment has continued at a solid pace, particularly public investment in infrastructure. In contrast, growth was worse than expected in resource-intensive Nigeria, South Africa, and Angola, the region's three largest economies. Moreover, rising public debt, due to either deterioration in fiscal balances or currency depreciation, is an increasing source of vulnerability throughout SSA. According to the October 2019 Africa's Pulse, the number of countries in debt distress or at high risk of external debt distress has almost doubled. However, the region's growth is projected to rise to 3.1 percent in 2020 and 3.2 percent in 2021, supported by stronger domestic demand even though the external environment is expected to be less supportive.

Figure 1.1: Global and regional economic growth, 2015–21f
(Percent)



Source: World Bank Group (WBG) 2019.
Note: AEs: Advanced economies; EMDEs: Emerging markets & developing economies; SSA: Sub-Saharan Africa.

Figure 1.2: Prices for Rwanda's main exports and imports, 2017–19



Source: World Bank Commodity Price Data (The Pink Sheet), October 2019.

Most countries in the East African Community (EAC) are expected to grow above both their own medium-term averages and the SSA average (Figure 1.1 and Figure 1.3). Although average GDP growth in the EAC is projected to decelerate from 5.6 percent in 2018 to 5.4 percent in 2019, that will be high relative the average of the last six years, and to SSA's growth in 2019. Growth is projected to moderate in 2019 compared to 2018 in Kenya, Uganda, and Burundi; to accelerate in South Sudan and Tanzania; and to stay about the same in Rwanda. Over the medium term the region as a whole is expected to grow about 5.5–6.5 percent annually.

1.2. Rwanda's Economy in 2019

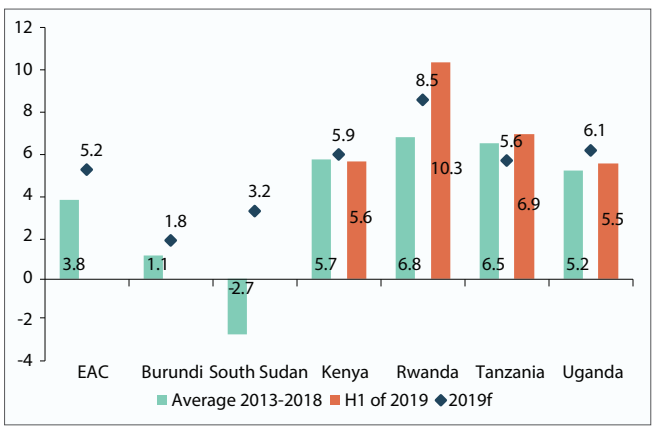
Rwanda's economic growth was very strong in 2019. Growth accelerated to 10.9 percent in the first three quarters of 2019 driven mostly by both public and private sector investment. Credit to the private sector picked up, reflecting the strong economic activity in the real sector, especially in the manufacturing sector which is experiencing double-digit growth for the second consecutive year. Fiscal expansion that the Government has embarked on played an important role in fueling domestic demand, but this has also led to widened external imbalances and heightened fiscal risks. As Rwanda continues to implement its National Strategy of Transformation (NST1) objectives, it would be critical to ensure fiscal and external sustainability.

1.2.1. Rwanda's growth momentum has continued

Rwanda's economy is estimated to have grown by 10.9 percent in the first three quarters of 2019, driven by robust performance in industry and services (Figure 1.4). The performance of the agriculture sector, which is the major source of Rwanda's employment, was largely in line with historical averages. Nominal GDP grew in parity with real GDP as a result of a near-zero GDP deflator in the first nine months of 2019.

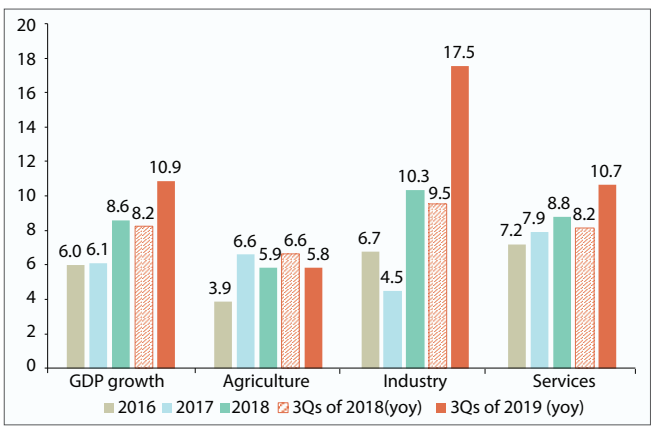
Growth in industry, led by construction, was exceptionally strong. In the first three quarters of 2019, industrial output grew by 17.5 percent, (y-o-y) up from 9.5 percent in the same period of 2018. In construction, growth surged from 12.1 percent in the first three quarters of 2018 to 30.2 percent (y-o-y) in the first three quarters of 2019 —the highest growth rate in a decade. It was supported by large-scale public infrastructure projects like Kigali Arena, Bugesera airport, and the roads. Government's capital expenditure has increased by 26 percent in H1 of 2019. The private sector is also contributing to this momentum: in the first nine months of 2019, bank lending to the private sector credit for construction activities increased by 31 percent (y-o-y).

Figure 1.3: Growth in EAC countries, 2013–18 and 2019f
(Percent)



Source: World Bank, Macro and Poverty Outlook.
Notes: "f" = forecast.

Figure 1.4: Rwanda's economic growth, 2016–19
(Percent)



Source: National Institute of Statistics of Rwanda (NISR).

Economic activity in other industrial subsectors was also remarkable, except for the mining sector. Strong growth in manufacturing reflects heavier demand in the subsectors that feed into construction as well as the overall progress in "Made in Rwanda" initiative. Manufacturing output grew by 12.3 percent in the first three quarters of 2019. Strong growth momentum in manufacturing was reflected in bank lending to the sector, which almost tripled in the first nine months of 2019. Growth was particularly strong in wood, paper, and printing, where output expanded by 50 percent, while non-metallic mineral products grew 38.5 percent, chemicals, rubber & plastic products grew 25 percent, and metal products, machinery, and equipment expanded 17.2 percent. These four manufacturing sub-sectors accounted for about 65 percent of the manufacturing growth in the first three quarters of 2019. The performance of food and beverage industries, the two largest sub-sectors of Rwanda's manufacturing sector, was lower than in the previous year. After a modest growth in 2018, output in the mining sector contracted in 2019 (by -0.7 percent) in the first three quarters, mainly due to declining prices on international markets. In spite of the potential Rwanda has long had difficulties in sustaining consistent growth in the mining sector.

Growth in services was above the average for 2014-18. Recent strong trends continued, with double-digit growth in trade (19 percent), transport (16 percent), professional and administrative services (13.1 percent), and financial services (11.9 percent). The hospitality sector (hotels and restaurants) also performed quite well expanding 10.6 percent in the first three quarters.

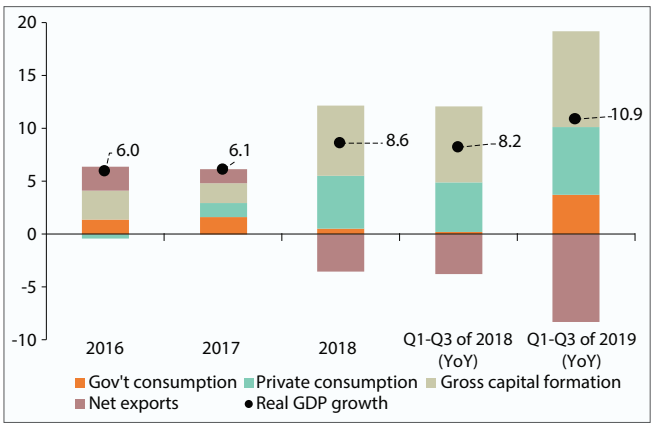
In the decade through 2018, information and communication technology (ICT) was the fastest-growing services subsector and has rejuvenated other sectors. However, in the first three quarters of this year its output contracted. The dynamism during the previous decade was mainly driven by mobile phone penetration: after mobile phone services were introduced in Rwanda in 1998, by 2008 penetration had grown to 1.3 million subscribers—13 subscriptions for every 100 people in Rwanda. By 2018, subscribers numbered 9.7 million—82 for every 100 people. Expansion of mobile phones plateaued more recently as Rwanda reached high level of penetration. The use of mobile phones has facilitated digitalization of other services, among them financial (mobile money, mobile banking services), agriculture (e-Soko), health (Mobile e-Health), and administrative services (*Irembo*), as discussed in the special topic elsewhere in this issue. Currently, the ICT sector represents about 1.4 percent of Rwanda's GDP.

Agriculture grew at a healthy rate. The sector expanded by 5.8 percent in the first three quarters of 2019, down from 6.6 in the same period of 2018. Food crops went up by 4.3 percent, one percentage point less than the average for 2014–18. The Seasonal Agricultural Survey indicates a mixed picture: maize (–0.1 percent), pulses (–0.1 percent), cooking bananas (+12.4 percent), Irish potatoes (+6.7 percent), sweet potatoes (+1.9 percent), and cassava (+7.5 percent). The performance of export crops as a whole was lower than in 2018 as a result of lower prices on international markets.

Growth acceleration was supported by robust domestic demand, especially investment. After decelerating in 2016 and 2017 as a result of Government's adjustment program to reverse growing external imbalances, investment picked up in 2018 and further accelerated in 2019. Investment grew by around 29 percent, y-o-y, in the first three quarters of 2019, higher than the 25 percent growth in 2018, and well above the average growth in 2016-2017 which was less than 9 percent. The surge in investments was supported mainly by public investments, which have elevated the share of gross capital formation in GDP to 26 percent, above the average of 24.1 percent in 2016–18.

In addition to domestic investment, consumption was in an upswing in 2019. Total consumption grew by 11.6 percent, in the first three quarters of 2019, from 5.4 percent in 2018 the same period. Government consumption grew by 25.6 percent in the first three quarters of 2019, while private consumption growth was 8.5 percent. As in 2018, the contribution of net exports to GDP growth was negative. Exports grew by 10 percent in real terms, but that was more than counter-balanced by the 25.8 percent growth in imports, which was largely driven by construction and manufacturing demand for intermediary and capital goods.

Figure 1.5: Demand and real GDP growth, 2016–19
(Percent)

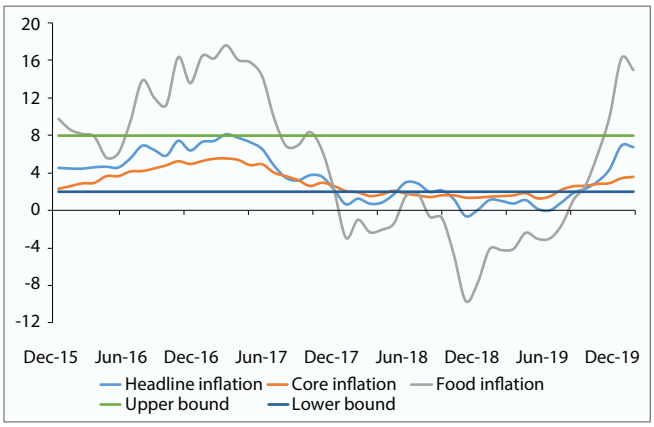


Source: NISR.

1.2.2. Monetary Policy and the Financial Sector: Inflation has remained Low but Gradually Rising

Low-inflationary environment came to an end with inflation picking up rapidly since September 2019. The headline inflation was below the target band for almost a year until mid-2019 (Figure 1.6) as the recovery of the region from the droughts of 2016-17 helped to suppress the food price inflation. Inflation resumed in Q3 of 2019 exacerbated by high food prices as the weather outlook in the region worsened because of excessive rains. It reached 14.9 percent in December 2019 in Rwanda pushing the overall inflation to 6.7 percent. High food price inflation was led mostly by higher prices of vegetables (especially beans), flour and cereal products, which are important staple food in Rwanda. Core inflation (excluding fresh food and energy products) was lower at 3.4 percent in November.

Figure 1.6: Headline inflation, 2016–19
(Percent)



Source: NISR.

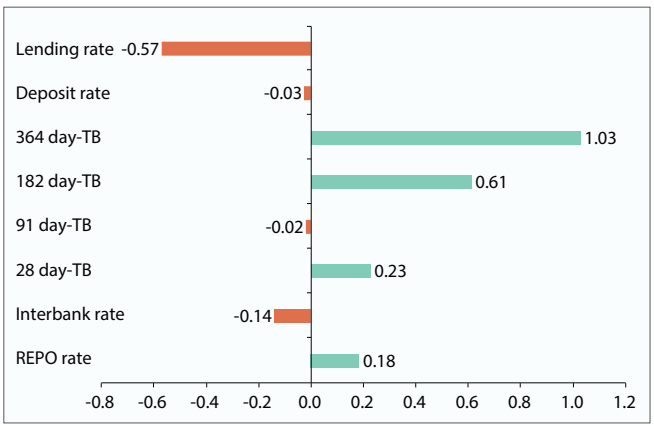
Fluctuations in food prices have a significant impact on rural welfare. Food dominates the rural consumer price index with a ratio of 48 percent which is significantly higher than for the urban CPI for which the ratio of food products is 27.4 percent. Consequently, rural inflation is highly volatile. As of November, rural inflation stood at 15.5 percent compared to 6.8 percent urban inflation. The rural food inflation rate stood at very high level of 27.4 percent.

Sustained low inflation in 2017-2019 enabled the Central Bank to lower the policy rate but the situation has rapidly changed. The policy rate currently stands at 5 percent, reduced from 5.5 percent in May 2019 against the background of persistently low inflation of 2018 and early 2019. However, with rapid reversal in inflation the space for the monetary policy has narrowed. The quarterly Monetary Policy committee (MPC), convened in November, maintained the policy rate at 5 percent.

Credit to the private sector picked up, reflecting the strong economic activity in the real sector. As of September 2019, credit growth accelerated to 20.6 percent, y-o-y, more than double the growth in 2017–18. Approved loans increased 41.1 percent in the first three quarters of 2019, compared to almost zero growth in new loans in the same period of 2018. Commerce and hospitality sectors received 27.5 percent of the new loans, while construction-related activities, i.e. public works and building received 23.8 percent (Table 1.1). But in terms of growth rates, manufacturing sector experienced the highest growth in bank lending, 173.7 percent, and saw its share in banks' portfolio of new loans rising from 5.2 percent as of September 2018 to 14.1 percent as of September 2019. Deposits grew 14.3 percent which is less than the growth rate in bank credit, leading to an increase in loan-to-deposit ratio from 84 percent of September 2018 to 90 percent in September 2019.

Interest rate for government borrowing domestically has increased (Figure 1.7). During the first three quarters of 2019, the average 364-day treasury rate was 8.2 percent, more than 100 basis points (bp) higher than in 2018. Similarly, the average 182-day treasury rate was 61 bp higher in 2019 than in 2018. The upward trend was also observed in the average 28-day treasury rates. In contrast, commercial banks' lending and deposit rates were lower than in 2018 with the lending rate averaging 16.5 percent in the first 9 months of 2019 and the deposit rate at 8.8 percent.

Figure 1.7: Changes in interest rates, December 2018–September 2019, *(Percentage points)*



Source: BNR data.

Table 1.1: Composition of new loans
(Billion of Rwf, unless otherwise)

	2014	2015	2016	2017	2018	Jan-Sept. 2017	Jan-Sept. 2018	Jan-Sept. 2019
Agriculture, fisheries & livestock	8.8	13.9	11.5	8.8	11.2	7.1	9.0	9.8
Mining activities	0.2	0.3	1.8	0.8	0.4	0.6	0.3	0.1
Manufacturing activities	72.5	51.2	63.9	60.3	70.6	41.9	44.5	121.7
Public works and building	138.4	237.3	195.0	230.8	252.9	166.7	156.9	205.5
Commerce restaurant and hotel	272.1	279.7	348.6	310.9	333.9	239.2	225.6	257.0
Transport & warehousing & communication	42.2	53.8	37.7	73.6	141.1	50.9	59.0	65.9
Financial and other non-financial services	4.5	14.8	5.8	9.4	4.7	8.7	2.3	11.4
Services provided to the community	26.1	22.6	21.8	19.5	29.5	13.7	19.8	27.2
Non classified activities	88.1	68.4	102.4	110.8	122.0	80.3	93.4	163.4
Total of new loans	**653.0**	**742.1**	**788.5**	**824.9**	**966.5**	**609.2**	**610.8**	**861.9**
Memorandum								
Stock of credit to the private sector, end period								
Billion of Rwf	906.3	1,178.6	1,285.4	1,464.2	1,622.1	1,408.9	1,510.4	1,814.0
% of GDP	16.6	19.7	19.3	19.3	19.8	19.1	18.8	20.4

Source: BNR.

Rwanda's banking sector remains well-capitalized and adequately liquid. It has kept the required Basel III capital adequacy ratio well above the required 10 percent and the statutory liquid asset ratio (liquid assets/total deposits) well above the statutory minimum of 20 percent. Bank balance sheets are in better shape; by September 2019 nonperforming loans (NPLs) had fallen from 7.3 percent of total loans a year ago to 5.3 percent. This reflects the effect of regulations BNR issued in January 2018 on credit classification and provisioning; they also require banks to promptly identify and monitor NPLs and better manage credit risks. By June 2019, the banking sector has written-off Rwf 29 billion of bad loans. Rapid increase in bank lending, however, may lead to increased risk of -performing loans especially in the sectors of commerce and hospitality, which has historically shown tendencies to overborrow and overinvest.

1.2.3. External position: The Current-account Deficit has Widened

Rwanda's external imbalances have deteriorated as a result of weak goods exports and strong import demand. In the 12 months through June 2019, the current-account deficit widened to 8.9 percent of GDP, compared to 7.8 percent for the calendar year 2018 (Table 1.2). The widening of the current deficit account deficit was largely driven by the deficit of goods and services, which rose to 12.2 percent of GDP, combined with a reduction in secondary incomes to 6.3 percent of GDP compared to a year ago. In a year end June 2019, exports of goods led the way down, falling by 0.1 percent (compared to a 38.4 percent growth in FY2017/18), offset by services exports which grew by 11.1 percent. Total imports, however, expanded by 9.1 percent in the 12 months through June 2019 from 6.4 percent a year earlier.

Low international prices depressed Rwanda's traditional exports.[1] Traditional exports accounted for 24.3 percent of goods exports in H1 of 2019; in dollar terms, exports of tin, wolfram, and coltan fell by 22.8 percent, y-o-y. The contraction was attributable mostly to unfavorable international commodity prices, which have long been a serious vulnerability for Rwanda. Exports of coffee and tea fell by about 6.3 percent, again mostly due to lower prices. In H1 of 2019, the average price of coffee dropped 8.2 percent, after a 4.8 percent drop in 2018. Moreover, coffee exports were down by 4.1 percent despite a 4.5 percent rise in the volume exported. The average price of tea declined by 11.8 percent, responding to a drop of tea prices at the Mombasa Auction.

Fortunately, performance of nontraditional exports and reexports was strong. After declining by 2.5 percent in 2018, in H1 of 2019 export values of nontraditional exports expanded by 25 percent, y-o-y, with exports of nonmineral items up by 67.4 percent, mainly driven by agricultural products, including processed food.[2] However, for the second consecutive half-year exports of nontraditional minerals (e.g., beryllium, unwrought lead, and gemstones) declined, this time by 30.5 percent, with shrinking volumes and volatile prices. Reexports, which account for about 30 percent of good exports, increased by 18.9 percent in H1 of 2019.

Strong imports of investment-related import goods drove increases in import bill. In H1 of 2019, capital goods, which account for about 32.4 percent of formal goods imports, rose by 40.3 percent; and intermediary goods, 27.9 percent of formal goods imports, expanded by 20.6 percent. These two components accounted for almost 90 percent of increases in import bill in H1 of 2019. Imports of consumer goods were up by only 4.3 percent and accounted for 7.4 percent of the expansion in total

[1] Rwanda's traditional exports are coffee, tea, cassiterite (tin), coltan, and wolfram.

[2] Edible vegetables, roots and tubers and products of the milling industry (maize, wheat, and cassava flours).

import bill, reflecting minimal growth in private consumption. Imports of energy products rose by 5.2 percent, much less than the 22.8 percent in 2018, due to lower international oil prices as imported quantities increased.

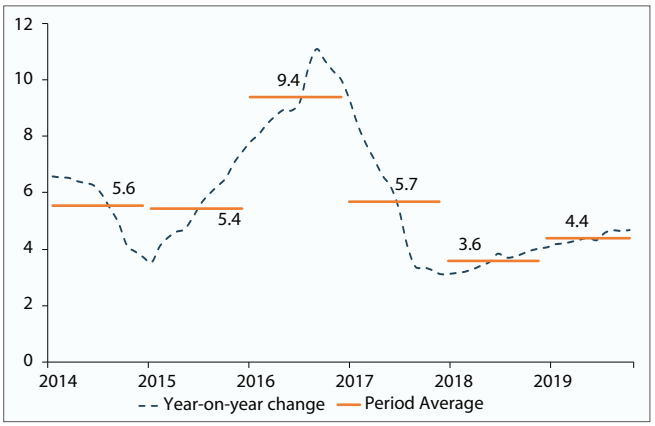
FDI inflows and capital transfers financed more than half of the current account deficit (Table 1.2). Net FDI slightly rose to 3 percent of GDP in FY18/19, and together with capital transfers totaled 5.6 percent of GDP, compared to 5 percent in the previous fiscal year. Government's net borrowing amounted to 3.9 percent of GDP, largely through budgetary loans. Portfolio and other private loans totaled about 0.4 percent in FY2018/19. External financing flows allowed to increase the central bank's foreign exchange reserves by close to US$60 million to about US$1,132 million as of June 2019. These gains in accumulation of foreign exchange reserves reversed in the following months reflecting the scale of fiscal pressures.

Table 1.2: The current account balance and financing
(Percent of GDP)

	FY14/15	FY15/16	FY16/17	FY17/18	FY18/19
Current account balance	**-11.9**	**-13.3**	**-9.7**	**-7.6**	**-8.9**
Goods and Services	-16.5	-17.1	-13.2	-10.8	-12.2
Exports of goods and services	17.5	18.2	19.7	21.9	21.9
o/w Minerals	2.1	1.1	1.1	1.6	1.3
o/w Coffee and Tea	1.5	1.6	1.5	1.7	1.5
o/w PKO	1.6	1.9	1.8	1.6	1.8
Imports of goods and services	34.0	35.3	32.9	32.7	34.1
o/w Capital goods	7.7	9.0	7.0	6.7	8.3
o/w Intermediary goods	8.5	7.5	6.3	6.7	7.5
o/w Energy products	4.0	3.0	2.8	3.0	3.2
Primary income (net)	-2.0	-2.2	-2.1	-3.5	-3.0
Secondary income (net)	6.6	6.0	5.6	6.7	6.3
o/w Remittances receipts	1.4	1.2	1.2	1.9	2.1
o/w Government budgetary grants	4.7	4.2	3.8	4.1	3.0
Capital account balance	**4.2**	**3.6**	**2.2**	**2.1**	**2.6**
Financial account balance	**8.1**	**9.4**	**11.9**	**6.4**	**7.4**
Direct investment (net)	3.4	4.2	2.9	2.9	3.0
Portfolio investment (net)	0.0	0.0	0.0	0.4	0.1
Loans and other investments (net)	0.0	0.0	0.0	0.0	0.0
o/w Government loans, net	4.7	4.2	4.3	4.2	3.9
Disbursement	4.9	4.5	4.6	4.9	4.8
Repayment	0.3	0.3	0.3	0.7	0.9
Net errors and omissions	3.1	0.9	0.4	-0.8	-0.2
Overall Balance	**1.7**	**0.7**	**1.8**	**1.4**	**0.6**

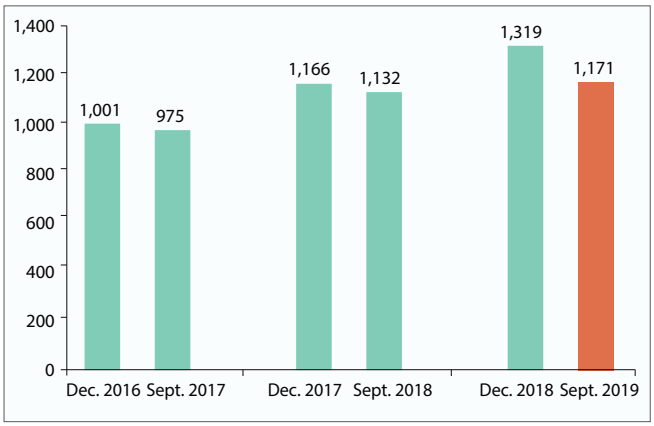
Source: BNR, Annual Reports 2018/19.

Figure 1.8: Depreciation of Rwanda franc against the US dollar, 2014–19, *(Percent)*



Source: BNR data.

Figure 1.9: Gross international reserves, 2016–19



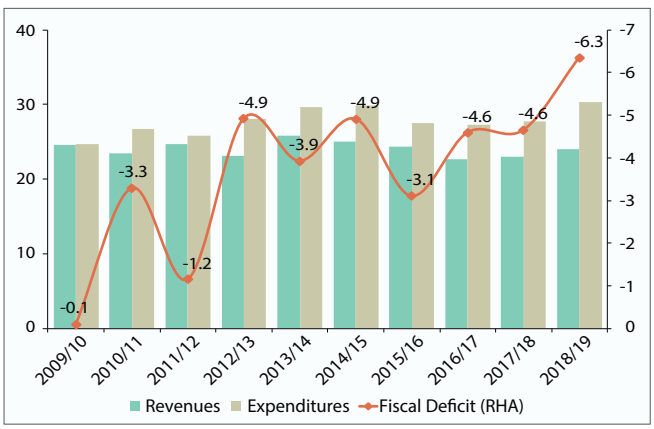
Source: BNR data and WB staff calculations.

The Rwandan franc continued to depreciate in response to increasing external imbalances, and there was pressure on the country's foreign exchange reserves in the second half of 2019. As of November 2019, the franc depreciated by an average of 4.4 percent, y-o-y, in nominal terms against the US dollar, after a 3.6 percent depreciation in 2018 (Figure 1.8). As of August 2019 the franc's real effective exchange rate depreciated by 2.6 percent, y-o-y. While still committed to its flexible exchange rate regime, BNR increased foreign exchange interventions to smooth volatility in the foreign exchange market. Gross international reserves dropped from the high of US$1,319 million in December 2018 to US$1,171 million in September 2019. While Rwanda's foreign exchange reserves typically demonstrate seasonality during a given year because of the patterns of concessional financing (declining throughout the year before replenishments in the last quarter), the decline in January-September of 2019 was more pronounced than in the previous years (Figure 1.9).

1.2.4. Fiscal expansion under the FY2018/19 budget was much wider than projected

In accrual terms, the fiscal deficit widened from 4.6 percent of GDP in FY2017/18 to 6.4 percent in FY18/19[3] (Figure 1.10). This was higher than projected in the budget, which targeted a deficit of 5.3 percent of GDP. The deficit was also the highest in the last 10 years. The primary deficit has widened to 5.2 percent of GDP. The deficit was driven by higher than projected spending while revenue performance was strong. Total spending, including net lending, expanded nearly 20 percent to reach 30.4 percent of GDP, Rwanda's historical highest. Total revenues were up in nominal terms by 13.4 percent in FY2018/19, reaching 24 percent of GDP, one pp higher than in the previous FY.

Figure 1.10: Government spending and revenues, 2009–19, *(Percent of GPD)*

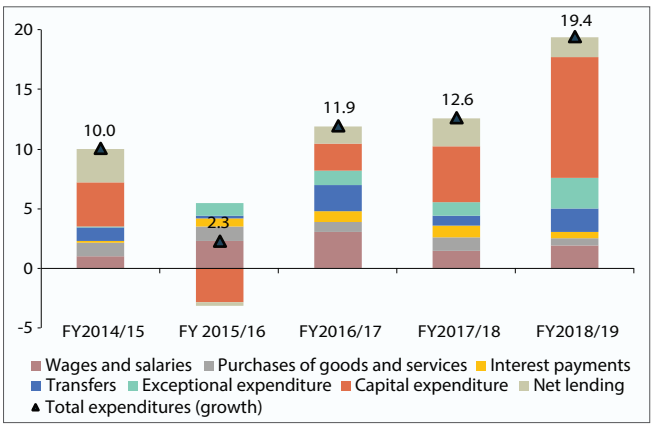


Source: Ministry of Finance and Economic Planning.
Note: The fiscal deficit is on an accrual basis.

[3] Rwanda's fiscal year is July 1 to June 30.

Government spending recorded the highest growth rate since 2013, with the capital and exceptional spending categories taking the lead (Figure 1.11). Expanding by 26.1 percent, capital spending were the main drivers of the rise in government spending. This was mainly driven by large projects, notably the Multi-Purpose Indoor Stadium (Kigali Arena) and District Stadiums at Bugesera, Ngoma, and Nyagatare; road rehabilitation and construction; and construction of border markets at Nyaruguru, Rubavu, Karongi, Burera, and Rusizi I to facilitate cross-border trade. The domestically financed component represented 58.2 percent of capital spending. Net lending, of which the majority goes to Rwandair, totaled 2.3 percent of GDP in FY2018/19. In FY2018/19, having to equip and send additional troops and police personnel for peace-keeping operations (PKO), the government made some additional front-loaded reimbursable payments which affected fiscal accounts in a magnitude of 0.4 percent of GDP. Over the last five fiscal years, PKO receipts averaged 1.7 percent of GDP (Table 1.2).

Figure 1.11: Drivers of changes in public spending, 2014–19
(Percentage points)



Source: Ministry of Finance and Economic Planning.

Tax revenues exceeded their revised official target. Total revenues were at Rwf 1,670.2 billion, up by 13.2 percent from the previous FY and well above the growth in the nominal GDP. Tax revenues were 1.6 percent more than the revised budget specified. As a result, the tax/GDP ratio rose from 15.9 to 16.5 percent, a ratio matching the level targeted for FY2021/22 in the Rwanda Revenue Authority five-year strategic plan.[4] The increase in tax revenues was broad-based: direct taxes up 14.6 percent, taxes on goods and services up 12 percent, and taxes on international trade up 13.8 percent. The last was mainly fueled by fast growth in imports of goods, especially beyond the EAC region. Non-tax revenues were up an estimated 20.5 percent and exceeded the revised budget target for FY2018/19, thanks to improved collection of administrative fees and charges. External grants, however, fell short of expectations (Table 1.3).

A larger than expected fiscal deficit has been accompanied by payment delays. That external funding went up from 4.5 percent of GDP in 2017/18 to 5.2 percent in 2018/19; domestic financing held at 0.6 percent (Table 1.3). Some invoices of suppliers and contractors were not paid before the end of the fiscal year, so that payment delays amounting to 0.6 percent of GDP accumulated. Rwanda has made big strides in improving public financial management in recent years. While accumulation of arrears in FY18/19 was driven not only by increased financing requirements for the new investment push but also by some transitory factors, such as shortfall in external grants and spending needs for PKO, it illustrates the risks associated with fiscal expansion for implementing NST1.

Rwanda's public debt has been rising steadily since 2013; as of December 2018, it (including public sector guarantees) amounted to 53.1 percent of GDP (Figure 1.14). It is estimated that the public debt reached at least 58.5 percent of GDP as of the end of 2019. More than 80 percent of Rwanda's debt is external public and publicly guaranteed debt, including commercial loans and Eurobonds. Rwanda has also provided guarantees for state-owned enterprises in strategic sectors that amounted to about 5 percent of GDP as of end 2018.

[4] Rwanda Revenue Authority (2019).

Table 1.3: Rwanda's public finances, 2015/16 to 2019/20

	2016/17 %GDP	2017/18 %GDP	2018/19 Revised budget Rwf billion	2018/19 Actuals Rwf billion	2018/19 Actuals %GDP	2019/20 Proj. %GDP
Revenue and grants	**22.7**	**23.0**	**2,061.2**	**2,065.0**	**24.0**	**23.3**
Total revenue	18.0	18.5	1,635.8	1,670.2	19.4	19.1
Tax revenue	15.5	15.9	1,396.9	1,418.8	16.5	16.1
Direct taxes	6.6	6.8	602.6	617.1	7.2	7.2
Taxes on goods and services	7.6	7.8	684.9	690.0	8.0	8.0
Taxes on international trade	1.3	1.2	109.4	111.7	1.3	1.3
Non–tax revenue	2.5	2.6	238.9	251.4	2.9	2.6
Total Grants	4.6	4.5	425.4	394.8	4.6	4.2
Budgetary grants	2.6	2.4	192.3	161.7	1.9	1.5
Capital grants	2.0	2.1	233.1	233.1	2.7	2.7
Total expenditure and net lending	**27.3**	**27.7**	**2,518.8**	**2,611.5**	**30.4**	**30.4**
Current expenditure	15.0	14.9	1,301.2	1,343.5	15.6	15.0
Wages and salaries	4.2	4.1	367.5	366.2	4.3	4.4
Purchases of goods and services	2.7	2.7	230.9	229.9	2.7	2.4
Interest payments	1.0	1.2	103.0	102.5	1.2	1.6
Domestic Int (paid)	0.5	0.6	55.4	54.6	0.6	1.0
External Int (paid)	0.5	0.5	47.6	47.9	0.6	0.6
Transfers	4.9	4.6	398.7	407.2	4.7	4.2
Exceptional social expenditure	2.2	2.3	201.1	237.7	2.8	2.2
Capital expenditure	10.7	10.8	1,027.6	1,071.7	12.5	12.0
Domestic	5.9	5.9	625.3	623.7	7.3	7.3
Foreign	4.8	4.9	402.3	448.0	5.2	4.7
Net lending	1.6	2.0	190.0	196.3	2.3	3.4
Overall deficit (Accrual basis)						
Including grants	-4.6	-4.6	-457.6	-546.5	-6.4	-7.1
Excluding grants	-9.2	-9.2	-883.0	-941.3	-11.0	-11.3
Change in arrears (net reduction–)	-0.3	-0.3	-27.3	55.2	0.6	-0.6
Overall deficit (Cash basis)						
Including grants	-4.9	-5.0	-484.9	-491.3	-5.7	-7.7
Excluding grants	-9.5	-9.5	-910.3	-888.1	-9.8	-11.9
Financing	**4.9**	**5.0**	**484.9**	**491.3**	**5.7**	**7.7**
Foreign financing (net)	4.5	4.5	435.7	448.3	5.2	5.9
Domestic financing	0.3	0.5	49.2	43.0	0.6	1.8

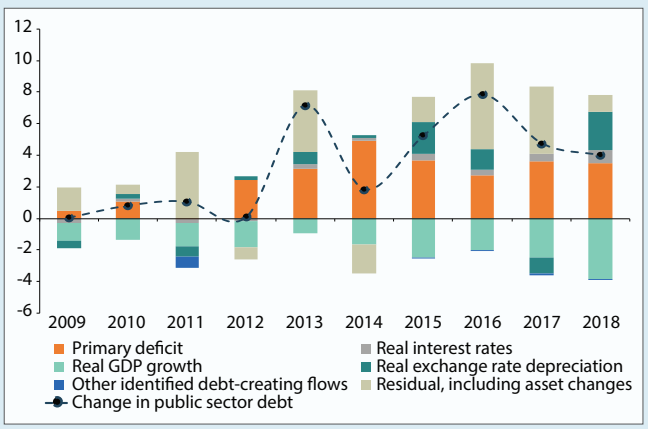
Source: Ministry of Finance and Economic Planning & NISR.

Box 1.1: Drivers of Rwanda's public and publicly guaranteed debt and fiscal space

High primary deficits have been fueling debt, as have real exchange rate depreciation and government guarantees (Figure 1.12). As debt accumulates, interest payments have also been going up, having now reached 1.2 percent of GDP. Although domestic debt is a small fraction of the total stock, it accounts for 54 percent of the interest burden because the interest rates are higher.

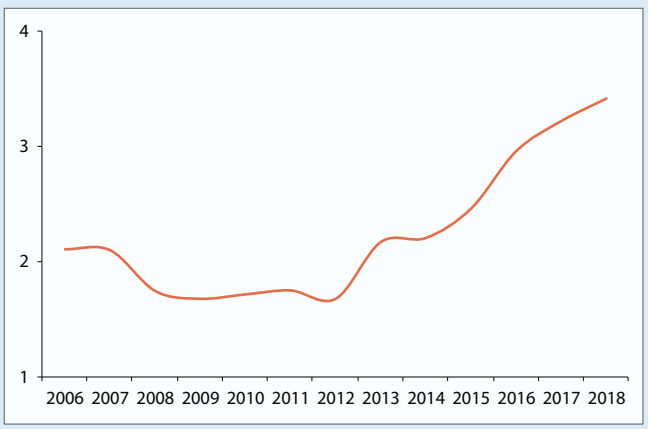
Rwanda's fiscal space has narrowed. Fiscal space is "room in a government's budget that allows it to provide resources for the desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy."[5] Operationally, fiscal space indicates the number of tax years it would take to repay outstanding public debt, which is computed as the ratio of public debt to the tax base.[6] For Rwanda, the number of tax years has gradually risen from 1.7 in 2012, the lowest recent level, to 3.4 in 2018 (Figure 1.13), signaling that the fiscal space is narrowing.

Figure 1.12: Decomposition of public debt accumulation, 2009–18 *(Percent of GDP)*



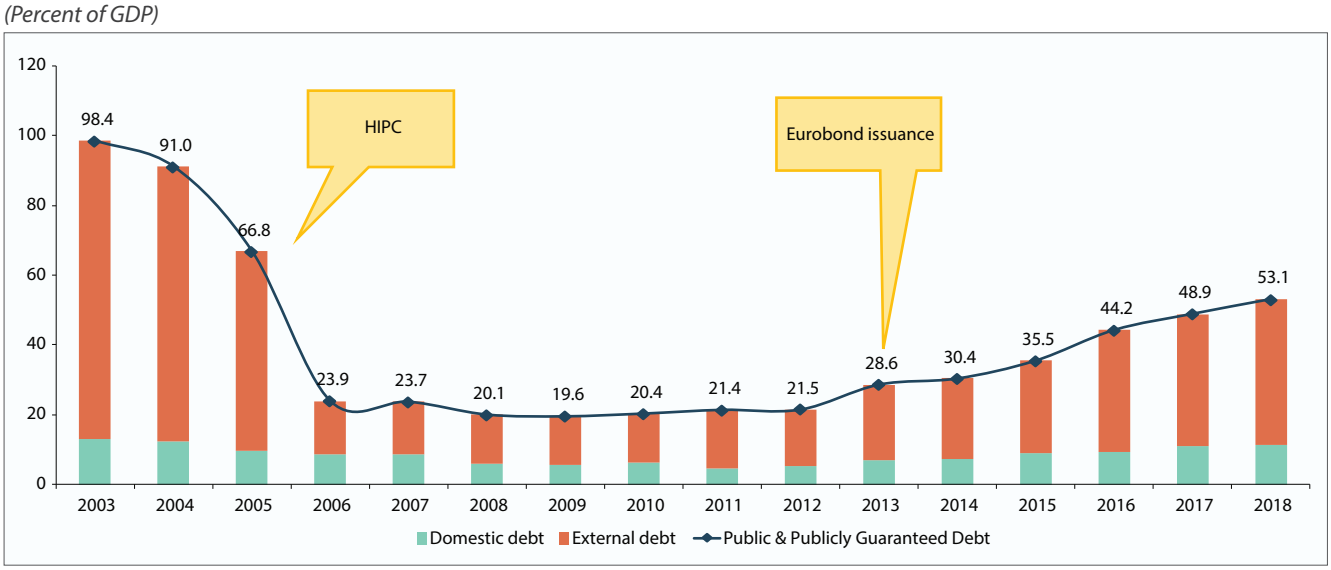
Source: MINECOFIN and DSA data.
Note: Government guarantees are reflected in "residual, including asset changes." Data included public and publicly guaranteed debt.

Figure 1.13: Tax years needed to repay public debt, 2006–18 *(Percent)*



Source: MINECOFIN, IMF, and World Bank Group.

Figure 1.14: Decomposition of Rwanda's public debt, 2003–18, *(Percent of GDP)*



Source: MINECOFIN.
Note: HIPC = Highly Indebted Poor Countries Initiative.

[5] Heller, P. S. 2005. "Understanding Fiscal Space." IMF Policy Discussion Paper PDP/05/4, International Monetary Fund, Washington, DC.

[6] Aizenman, J., and Y. Jinjarak. 2010. "De Facto Fiscal Space and Fiscal Stimulus: Definition and Assessment." NBER Working Paper No.16539, National Bureau of Economic Research, Cambridge, MA.

1.3. Rwanda's Economic Outlook and Risks

1.3.1. Medium-term growth prospects are robust but fiscal risks have intensified

This edition forecasts very strong economic growth for Rwanda for 2019 - 2021. In an upward revision from the last edition's projection of 7.8 percent, in 2019, economic growth is projected to duplicate the 2018 level of about 8.5 percent. However, the impetus is mainly the larger than expected fiscal expansion (Table 1.4). For the medium-term, growth should remain strong as the current public investment push will continue in the medium term, though at a lower scale—in 2019 many projects were frontloaded. While medium-term growth is expected to replicate the patterns in the first year of the NST1, public sector investment alone would not be able to sustain 8 percent annual growth through 2021. The high growth scenario of this REU assumes that the private sector will provide much more investment in response to reforms underway to build up the private sector (Box 1.2).

Table 1.4: GDP growth, 2016–21f
(Percent)

	2016	2017	2018	2019e	2020f	2021f
Real GDP growth, at constant market prices	6.0	6.1	8.6	8.5	8.0	8.0
Inflation (consumer price index, annual average)	5.7	4.8	2.4	4.7	5.0	5.0
Current account balance (% of GDP)	–16.0	–6.8	-7.8	-10.5	-9.7	-8.9
Overall fiscal deficit (% of GDP, calendar year basis)	-3.3	-4.6	-4.7	-8.2	-5.9	-6.3
General Government Debt (% of GDP)	44.2	48.9	53.0	59.2	62.2	64.6

Source: IMF data

Box 1.2: Major economic reforms in 2019

Financial sector. The National Bank of Rwanda, BNR, continued to make progress on a wide range of policies to fortify Rwanda's financial system. Introduced in October 2019 were (1) a directive on loan-to-value limits to prevent the systemic risks associated with economic cycles in property markets; (2) a regulation governing shareholding, acquisition, and amalgamation of banks to ensure that acquisition or ownership does not expose the banking system to undue risks or hinder effective supervision; (3) a regulation on major investment and placements by banks to minimize risks related to excessive investment in real estate and equities—the two assets whose value is most affected by changes in market sentiments; (4) creation of the Insurance Sector Anti-fraud and Related Crimes forum; and (5) enhancement of the regulation on bank internal controls and audits. These reforms respond to the main recommendations of the Joint Government/World Bank Group report on Future Drivers of Growth, "Preserve and Strengthen the Stability and Performance of the Financial Sector."

Mining sector. The government has recently issued a series of regulations to maximize mining sector gains. The Prime Minister's Order determining the structure and functioning of the committee charged with assessing applications for licenses and resolving disputes related to mining and quarry operations is intended to streamline committee activities and attract investments. Other regulations introduced by the Rwanda Mines, Petroleum and Gas Board (RMB) cover (1) provision of services relating to mining and quarry operations; (2) the content of mineral processing and trading licenses and modalities for granting them; (3) the format and content of mineral licenses and the content of agreements with holders of a mining or industrial quarry license; (4) determination of potential mining areas, criteria for categorizing mines, and modalities and requirements for mineral license applications and tenders; (5) the volume of mineral ore samples; and (6) categories of quarries, requirements for acquisition of quarry licenses, and reporting.

Domestic resource mobilization. The government has amended the requirements for exempting an industry from the value-added tax on machinery, capital goods, and raw materials.

The medium-term outlook assumes that debt will accumulate faster than REU14 projected. This issue projects that in 2020 public and publicly guaranteed debt will transcend 60 percent of GDP and continue on up in 2021. This is higher than projected in REU14 and is driven by the large fiscal expansion of 2019. Reliance on concessional financing will help keep Rwanda's debt sustainable even as it goes up. The Government will not use BNR financing directly or indirectly to cover its financing requirements, which reduces the risk to macroeconomic stability arising from the fiscal expansion. Despite its clear strengths in macroeconomic and debt management, Rwanda is now confronted by the difficulty of financing its ambitious public investment objectives, which highlights the limits of the public-sector-led model to deliver sustained growth over the long-term.

Growth in industry will continue to be strong, boosted by large-scale infrastructure projects. The Budget Framework Paper for 2019/20–2021/22 outlined the scope of public investments (e.g., roads, airport, industrial parks in secondary cities). The demand for construction materials is expected to boost growth in manufacturing subsectors that feed into construction. Growth in services is projected to remain stable at about 8 percent in the medium term. Agriculture is projected to growth by 5 percent, tracking the 2015–18 average of 5.4 percent.

In the medium term, the CAD will remain elevated. Because of expected higher imports for large-scale investments, in 2019–21 the CAD is projected to again hit 9–10 percent of GDP. Both nontraditional and traditional exports are projected to strengthen over the medium term, but they will be offset by strong domestic demand for capital and intermediate goods. Higher productivity in coffee production, construction of new tea factories, new investments in horticulture, and a revamped mining sector should further support Rwanda's exports.

With the return of inflation to the "normal" range and current pressures on the exchange rate and reserves, the space for monetary policy has narrowed. Rwanda's flexible exchange rate regime will help it absorb external shocks and keep its economy competitive. The current IMF Policy Coordination Instrument is supporting BNR's forward-looking monetary policy operations, e.g., through building up the financial markets and widening access within the economy to financial resources.

1.3.2. Risks to the Outlook

Both domestic and external risks to Rwanda's economic outlook have worsened somewhat. The main risk to the economy is the growing reliance demonstrated in 2019 on growth in public investments and fiscal stimulus. In the medium term, the scaling-up of public-sector-led investments is both an opportunity and a challenge. While fiscal expansion is necessary to achieve the government's targets for expanding access to infrastructure, it can raise the debt, widen external imbalances, crowd out access of the private sector to finance, and undermine long-term growth. Sustaining high growth has required a larger than expected increase in the public debt, and long-term productivity gains from the scaling up of investments may be less than expected. If the trend continues, Rwanda may have difficulties in financing its growth in the medium term. Rwanda's commitment to concessional borrowing and monetary stability significantly reduces the risks to macroeconomic stability, but reliance on the public sector for achieving the growth targets of NST1 raises the fiscal risks.

Despite continuing efforts, the ineffectiveness of the private sector is still a major risk to Rwanda's growth outlook. As the fiscal expansion for carrying out NST1 gradually subsides, it will become difficult to sustain high growth through 2020 and 2021

without more private investment. Rwanda's growth ambitions for the medium to long term thus depend on the ability of the private sector to take the lead. The government has tried to prioritize public investments that can crowd-in private investments, but more effort is required to improve allocation of economic resources through the markets and thus achieve sustainable and productivity-led long-term growth.

There are also weather-related risks, such as the droughts and floods that can depress agricultural production. The baseline projections assume that normal rain patterns will continue over the medium term, which should sustain growth in agricultural production that is largely in line with the average of the past decade. Nevertheless, Rwanda is quite vulnerable to climatic shocks, such as drought and erratic rainfall. Droughts most threaten the eastern part of the country floods; pose major risk in the northern and western parts. Investing in rural infrastructure to help make Rwanda's agriculture more resilient must be given a high priority.

The main external risks are a more severe slowdown in global economic growth than is currently projected and persistence in regional tensions. A weaker than expected global economy will depress prices for the commodities Rwanda exports. The heightened probability of global turmoil has also exacerbated the risks of capital outflows from EMDEs in search of safer havens. Rwanda's economic prospects may also be affected if regional tensions persist or intensify. Impediments to regional integration are major obstacles for Rwanda's sustained development because greater integration into regional markets is crucial to propel the needed structural transformation and growth.

PART TWO

ACCELERATING ECONOMIC GROWTH THROUGH DIGITAL TRANSFORMATION

With rapid digital transformation now re-shaping our global economy, permeating virtually every sector and aspect of daily life, investment in the foundational building blocks that underpin digital economy growth will help determine a country's ability to succeed in the global market place, harness emerging opportunities and ultimately offer its citizens a better quality of life. Disruptive technologies are already altering traditional business models and pathways to development, yielding significant efficiency and productivity gains, increased convenience, as well as better access to services. Globally, growth of the digital economy is quickly outpacing the growth of the overall economy. Well-functioning digital economies are thus expected to achieve much faster economic growth, offer more innovative services, as well as create more jobs. There is a mounting body of evidence that illustrates the capacity of digital technology adoption to significantly boost productivity and support poverty reduction.[7] Access to broadband and digital financial services have, for example, been associated with significant GDP and per capita income growth, with access to innovative digital services such as mobile money helping to pull thousands out of poverty.[8]

Despite its small size, Rwanda has distinguished itself as a country that has "bet big"[9] on digitization, as means to accelerate growth and reduce poverty.[10] Rwanda has already begun to chart an ambitious course for achieving rapid digital transformation.[11] This includes investing heavily in the roll-out of digital infrastructure, piloting innovative schemes and partnership with non-profit and for-profit organizations to boost the nation's digital skills base, expanding its public digital service capability and creating an enabling environment for digital service and business innovation. Rwanda's ICT sector has been growing rapidly over the last five years, witnessing a 12.7 percent value-added increase in 2014-2018.[12] The World Economic Forum's Networked Readiness Index subsequently rated Rwanda first among East African nations in terms of its readiness to exploit the opportunities offered by ICT to boost growth and competitiveness.[13]

However, there is room to do more in terms of capitalizing on progress and investments made so far. For Rwanda to leverage digital transformation as a driver of growth, job creation and greater service delivery, digital adoption needs to markedly improve. Rwanda will need to tackle the affordability of digital devices and services, but also bridge the lingering basic digital skills gap, to increase uptake of digital tools and services among both individual users and businesses, creating a virtuous cycle of demand that can help propel further expansion and application of digital products and services. However, a lingering digital skills gaps emerges a key cross-cutting barrier to increasing digital adoption and expanding digital innovation. For Rwanda's digital evolution to

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7 See, for example: Jorgenson, Dale, W., Mun S. Ho, and Kevin J. Stiroh. 2008. "A Retrospective Look at the U.S. Productivity Growth Resurgence." Journal of Economic Perspectives, 22 (1): 3-24. DOI: 10.1257/jep.22.1.3; Lions Go Digital: The Internet's Transformative Potential in Africa, November 2013; Qiang, Christine Zhen-Wei, George R. Clarke, and Naomi Halewood. 2006. "The Role of ICT in Doing Business." In Information and Communications for Development. Washington D.C.: World Bank.

8 In 2016, research was conducted in neighboring Kenya 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.

9 Sizable public investments have inter alia been made in the national backbone (US$40 million), roll-out of e-government infrastructure and services, as well as new digital skills schemes. Commitment to 'digital' is also evident in the many high-level strategies produces and leadership demonstrated on the pan-African level.

10 Kigali is, for example, home to the Smart Africa Secretariat, which hosts the annual Transform Africa Summit – an initiative that seeks to accelerate Africa's development by increasing access to broadband and usage of information and communications technology (ICT) along with efforts to create a single digital market across the continent to enable free flow of digital communications, services and e-commerce. See: https://smartafrica.org/

11 Beginning as early as 2000, the National Information Communications Infrastructure (NICI) policy sought to facilitate increased digitization, through a series of five-year plans.

12 National Institute of Statistics of Rwanda. 2019. "Gross Domestic Product – 2018". http://statistics.gov.rw/publication/gdp-national-accounts-2018

13 WEF. 2016. Networked Readiness Index.

become truly transformational, the private sector also needs to play a far greater role in spearheading digitization, alongside the ambitious initiatives launched by government, through both increased technology adoption and support for innovation that can enhance productivity, spawn new services and create new off-farm jobs. However, for the private sector's contribution to the digital economy to increase and for areas like e-commerce to thrive key enablers need to be in place, including greater adoption of broadband, digital payments and access to a larger market of digitally savvy consumers that allow digitally enabled new companies to quickly scale. Given its small market size, Rwanda will need to be at the forefront of efforts to create a larger, more integrated regional digital market to help decrease the costs for digital services for consumers and create room for digitally-enabled firms to quickly scale. Finally, as digital adoption increases, Rwanda will also need to do more to secure online transactions and protect users to create a virtuous cycle of further digital adoption, through balanced data protection provisions and stronger cybersecurity capabilities.

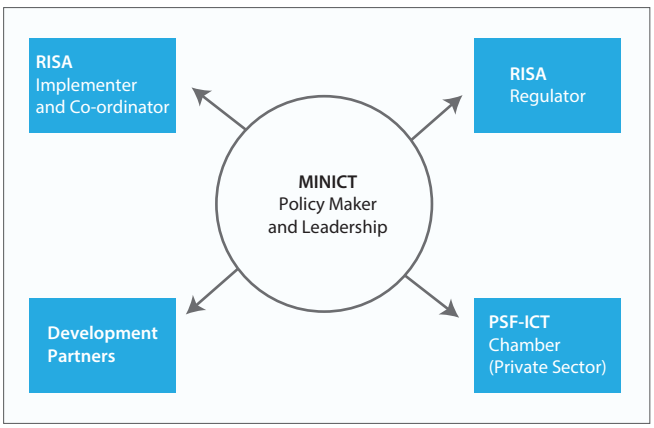
This special focus synthesizes the key findings and recommendations of the 'Rwanda Digital Economy Assessment', carried out by a multi-disciplinary team of World Bank experts in early 2019. The assessment was based on primary research, key informant interviews, as well as consultations with stakeholders across government, the private sector and civil society, using an integrated research methodology that examines the five foundational building blocks that underpin Rwanda's digital economy ecosystem, namely: (i) Digital Infrastructure; (ii) Digital Skills; (iii) Digital Platforms; (iv) Digital Financial Services; and (v) Digital Entrepreneurship. The sections that follow provide a brief snapshot of Rwanda's digital development journey so far, but also details key areas where Rwanda should focus its efforts moving forward, if it wants to harness the power of the digital economy to propel economic growth.

2.1. A Snapshot of Rwanda's Digital Development Journey

A Government deeply committed to 'digital'!

Rwanda's digital development journey to date has been spearheaded by a government deeply committed to leveraging ICT as a cross-cutting enabler of economic growth, innovation and service delivery. This commitment is reflected in the sheer number of related strategies and policy plans that the Government has adopted over the years, as well as sizable investments and ambitious initiatives launched that have sought to create an enabling environment for ICT adoption, expand digital infrastructure, digital platforms and services, promote further digital skills development, foster a national culture of innovation and position Rwanda as a regional digital hub.[14] In addition to articulating an ambitious strategic agenda pertaining to digital development, Rwanda has also created an enabling public institutional framework that is often emulated as best practice, which inter alia includes the line ministry charged with policy and strategy and a dedicated implementation and coordination agency (Figure 2.1).

Figure 2.1: Institutional framework for digital development



Note: The Ministry of Information and Communications Technology and Innovation (MINICT); the Rwanda Utilities Regulatory Authority (RURA); the Rwanda Information Society Authority (RISA); Private Sector Federation (PSF)–ICT Chamber.
Source: National ICT Hub Strategy. 2018.

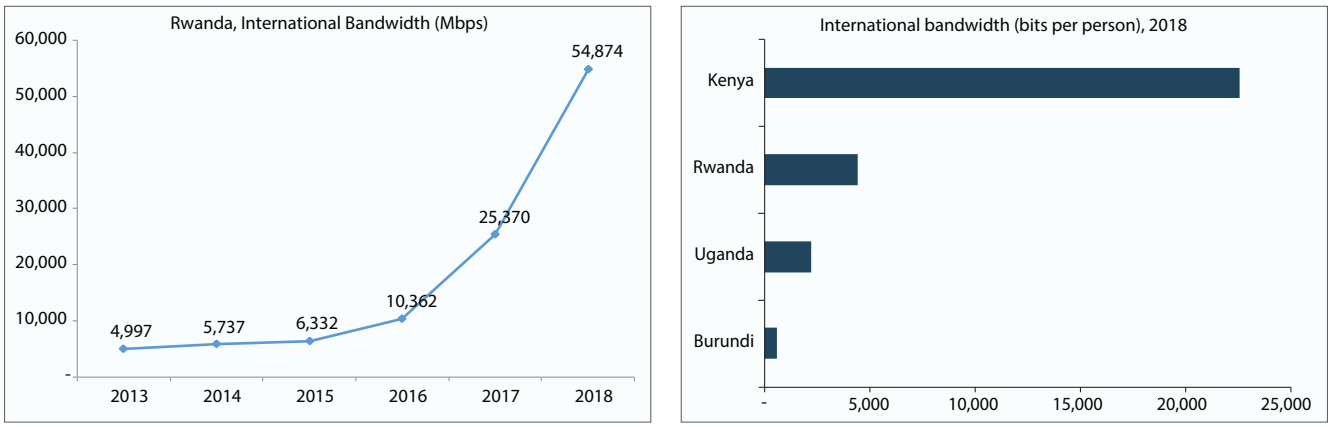
[14] Notable examples include the National Information Communications Infrastructure (NICI) Policy, 2020 SMART Rwanda Master Plan, the 2019-2024 ICT Hub Strategy and 2018-2024 ICT Sector Strategic Plan, National Broadband Policy.

2.1.1. Digital infrastructure

Rwanda's access to international bandwidth has grown ten-fold over the last five years, on the back of new cross-border terrestrial links that allow Rwanda to access undersea cables landing in neighboring Kenya and Tanzania (Figure 2.2). Meanwhile, the roll-out and expansion of a national fiber optic backbone network, leveraging sizable government investment, has helped distribute said connectivity across Rwanda, bringing a growing part of the population within closer proximity to high-speed internet (Figure 2.3).

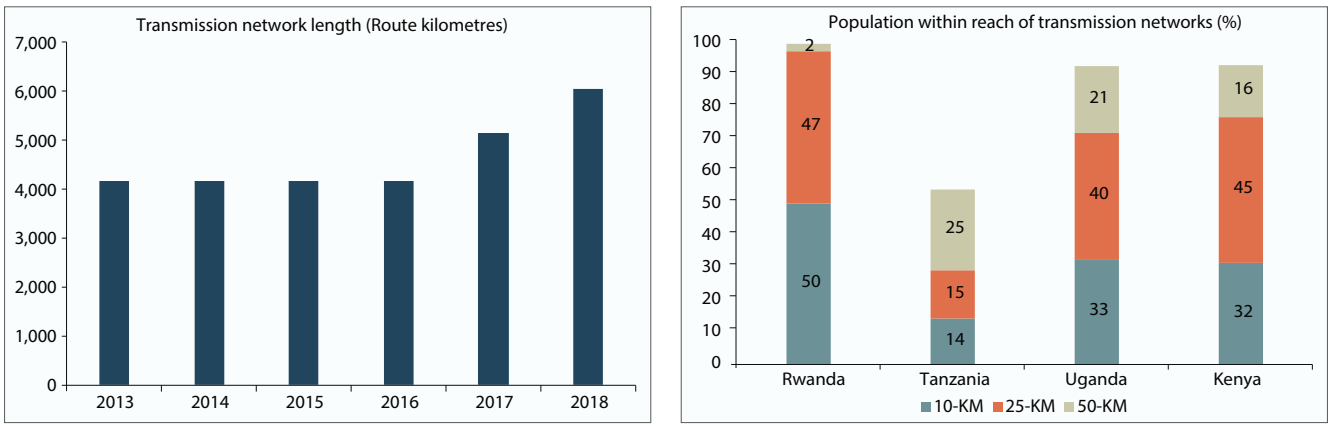
Rwanda has set the bar regionally in terms of mobile network coverage, which provides last-mile access to broadband for a majority of existing users. 3G network coverage is now at 93.5 percent, compared with a regional average of 76 percent. Moreover, Rwanda has also achieved impressive 4G network coverage, by leveraging a public-private partnership (PPP) between the Government of Rwanda and Korean Telecom to support the launch of a 4G wholesale network - resulting in the establishment Korean Telecom Rwanda Networks (KTRN) Today, Rwanda's 4G coverage officially stands at 96.6 percent – an unprecedented level of coverage for a country with Rwanda's level of socio-economic development (Figure 2.4).

Figure 2.2: Access to international bandwidth - capacity and speed



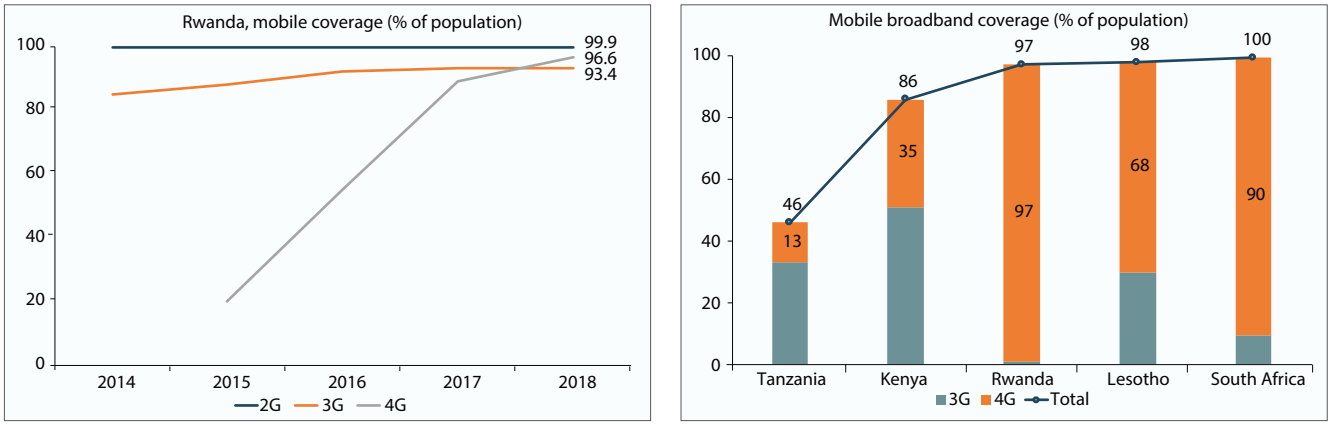
Source: RURA and regional regulators. 2019.

Figure 2.3: Length of national transmission network and population within reach



Source: ITU. 2019.

Figure 2.4: Mobile broadband coverage



Note: Data for Rwanda and South Africa refers to December 2018 and to March 2018 for Kenya, Lesotho and Tanzania.
Source: RURA, Safaricom and Vodacom. 2019.

While Rwanda's expansion of digital infrastructure has been impressive, big gaps in the uptake of high-speed internet services remain. Official figures put internet penetration at 58.3 percent[15], yet actual use is estimated to be lower, based on the number of active subscribers reported by mobile network operators (MNOs).[16] A mix of barriers related to digital literacy (discussed further below), affordability, services quality and perceived relevance and value currently appear to be hampering uptake of broadband, and along with it access to other digital services that require users to first be connected.[17]

Notably, the affordability of devices and broadband remains a key barrier. The present cost of handsets prevents some 37 percent of households from owning a phone, which typically also stops them from accessing mobile and broadband services altogether (Figure 2.5). Moreover, weak access to smart phones and 4G compatible devices restricts access to basic 2G or slower 3G internet services, with some 74.3 percent of current Rwandan mobile subscribers therefore continuing to rely predominately on 2G services that have limited practical application or use beyond voice and SMS based services (Figure 2.6). Government is committed to addressing the issue, through ongoing discussions with mobile operators and manufacturers, including through the launch of new schemes.[18] To date, efforts to boost local manufacturing, including the recent launch of the Mara Group's local smartphone production and assembly, is yet to target or bring down the cost of smart phones for those at the base of the pyramid.[19] Affordability of broadband services is also a key factor that adversely affects internet consumption. While Rwanda has some of the lowest absolute prices in the region, broadband services remain expensive relative to average incomes and below global affordability target.[20] The average monthly price of 1GB of data was US$0.56 in 2018, equivalent to 5.1 percent of the median monthly income[21,22] and more than double the Alliance for Affordable Internet (A4AI) target of 2 percent. (Figure 2.6)

[15] RURA. 2019 See: https://rura.rw/fileadmin/Documents/ICT/statistics/ICT_Statistics_report_as_of_September__2019.pdf

[16] For example, MTN reported that at the end of 2018, just 27 percent of its subscriptions were active.

[17] For example, focus group discussions carried out in 2017 among non-Internet users across Rwanda cited illiteracy and language skills, affordability, and a limited awareness of the related benefits to be the three main constraints, according to RIA. The latter was a particular issue in rural areas.

[18] For example, the MINICT recently began collaborating with MTN on the '#connect Rwanda Challenge', which has sought to supply the unconnected with smart phones. See: https://www.ktpress.rw/2020/01/connect-rwanda-challenge-rdb-hands-over-smartphones-to-park-rangers/

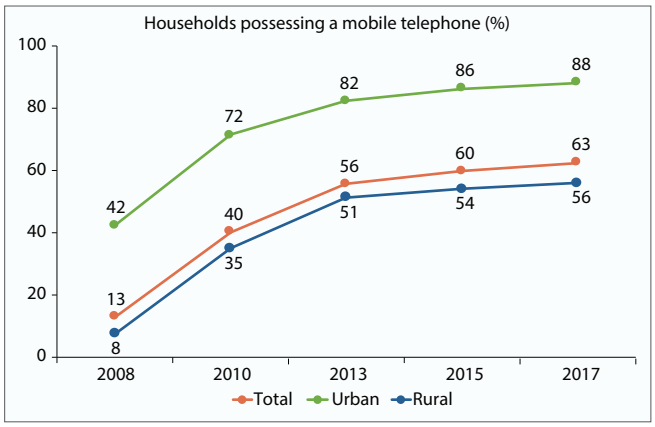
[19] See: https://www.weforum.org/agenda/2019/10/rwanda-launches-first-made-in-africa-smartphones/ Phones on offer range from between $130-190USD.

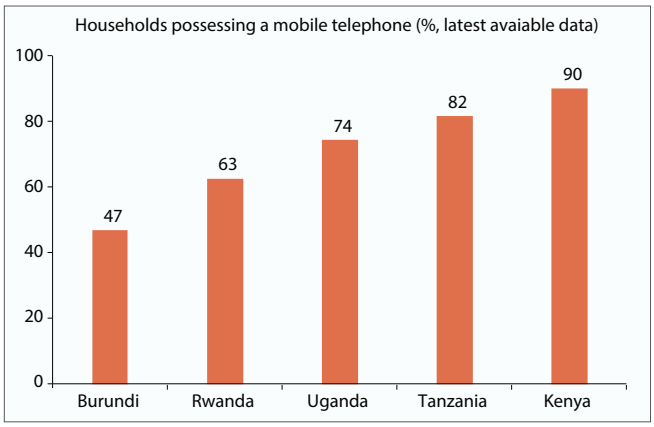
[20] See: Alliance for Affordable Internet (AFAI). 2018. "UN Broadband Commission Adopts A4AI '1 for 2' Affordability Target." News, January 23, 2018. https://a4ai.org/un-broadband-commission-adopts-a4ai-1-for-2-affordability-target/

[21] Cable, 2018.

[22] 4G remains more expensive than 3G, despite the fact that the wholesale price for 4G has been falling and appears to be in line with, or lower than, the retail price for 3G.

Figure 2.5: Households possessing mobile phone, Rwanda and East Africa





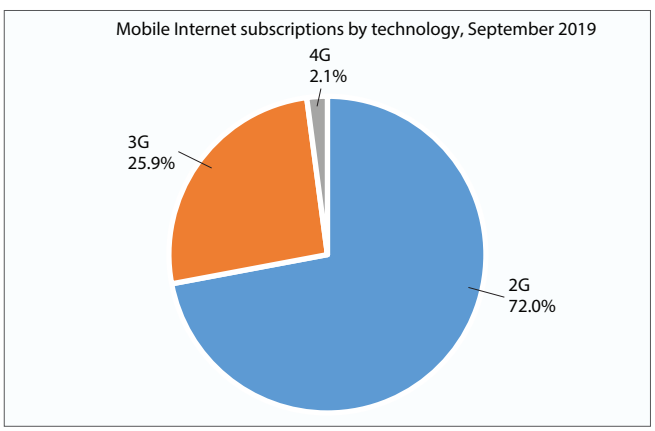
Note: In the right chart, data for Rwanda, Burundi and Tanzania refer to 2017, data for Uganda to 2016 and for Kenya to 2015.
Source: Recent Integrated Household Living Conditions Surveys.

Despite Government's large investment in 4G and impressive coverage, the network remains underutilized. The two main MNOs appear to have taken the business decision to invest in upgrading their own 3G networks and promoting their proprietary 3G services, over promoting re-sale of 4G services utilizing the KTRN wholesale network. The MNOs are prevented from further upgrading their own networks to offer 4G services due to the KTRN 4G license exclusivity. 4G service offerings and active promotions are therefore mostly coming from smaller internet service providers (ISPs) utilizing the KTRN network. While these ISPs are growing quickly, they still cover only a small consumer base. These factors, combined with still limited affordability of 4G capable devices have resulted in lower than expected 4G penetration (Figure 2.6). The Government is actively looking to address these bottlenecks as part of its wider efforts to ensure a conducive environment for broadband market development.

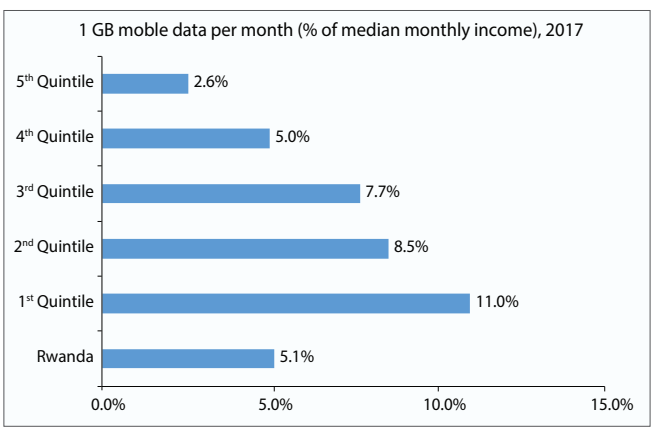
2.1.2. Digital skills

Government has sought to embed digital skills training in the national education system. Basic digital skills are now included in the national competency-based curriculum (CBC) at both primary and secondary school level, which spans from "befriending" the computer and learning basic usage in lower primary school, all the way to teaching optional and specialized classes in programming and database management at upper

Figure 2.6: Mobile Internet subscriptions by technology, 2019 and affordability of 1GB of data, 2017



Source: RURA. 2019.[23]



Source: NISR 2018 and MTN 2019.

[23] The total number of mobile internet subscriptions in September 2019 where 7,038,123, of which 147,054 where on 4G and 1,820,292 on 3G.

secondary level. Moreover, schemes such as One Laptop per Child (OLPC)[24], launched in 2008, and the more recent SMART Classrooms[25] initiative have sought to boost access to devices.[26] In 2017, some 44 percent of primary schools, and 60.2 percent of secondary schools thus reportedly had access to ICT for teaching and learning.[27]

However, a lingering basic digital skills gap emerges as a key cross-cutting barrier to increasing digital adoption and expanding digital innovation. Government estimates that computer literacy is a mere 8.4 percent[28], which hampers usage of even the most basic digital devices and applications, but also dampens demand for more advanced tools and services. Government has thus launched a plethora of initiatives aimed at tackling this issue head-on (more on this below). However, gaps in access to key enablers in schools, including connectivity, digital devices, reliable electricity, digital content and adequate teacher capacity, continue to adversely affect both the integration of ICT in the classroom and delivery of digital skills training. For example, a mere 25.1 percent of primary schools and 41.3 percent of secondary schools reportedly had access to the internet in 2017[29], which meant that ICT was predominately being taught in an offline environment, or in theory, with limited practical application. More broadly, issues related to the current quality of education and weaker enrollment at secondary level[30], particularly in STEM-related subjects[31], also affect digital skills attainment, including the pipeline of graduates that can proceed to access more advanced digital skills training.

As it stands, Rwanda is not producing the number of digital specialists needed, nor of the requisite caliber, to propel the kind of cross-sectoral digital transformation that Rwanda aspires to achieve.[32] While ICT courses are offered by most types of TVET institutions, few are considered to be at digital specialist level. Moreover, few TVET students choose to study advanced-level ICT course and even less graduate.[33] Meanwhile, courses available through public and private universities focus primarily on computer maintenance, software development, programming, information management and networking. Available training thus restricts the breadth and depth of digital skill available locally. While a handful of universities do offer courses in cutting-edge technology, few students can afford to access this training. Some 2,544 students were thus estimated to be graduating with a degree in ICT in 2016. However, these graduates typically lack hands-on experience, due to limited opportunities for practical training, as well as misalignment between skills taught and those demanded by prospective employers. An 'inadequately educated workforce' thus emerges as one of the barriers to doing business

[24] The scheme has sought to provide primary school students with XO computers, targeting a minimum of 5 schools per district.

[25] This scheme has sought to provide secondary schools with two computer laboratories (labs), each equipped with 50 computers. According to MINEDUC, about 52 percent of public and government-aided secondary schools now each have two computer labs.

[26] Ministry of Education. 2016. ICT in Education Policy.

[27] Ministry of Education 2017. Rwanda Education Statistics 2017.

[28] Referenced in the Digital Talent Policy and 2018-2024 ICT Sectors Strategy.

[29] Ministry of Education. 2017.

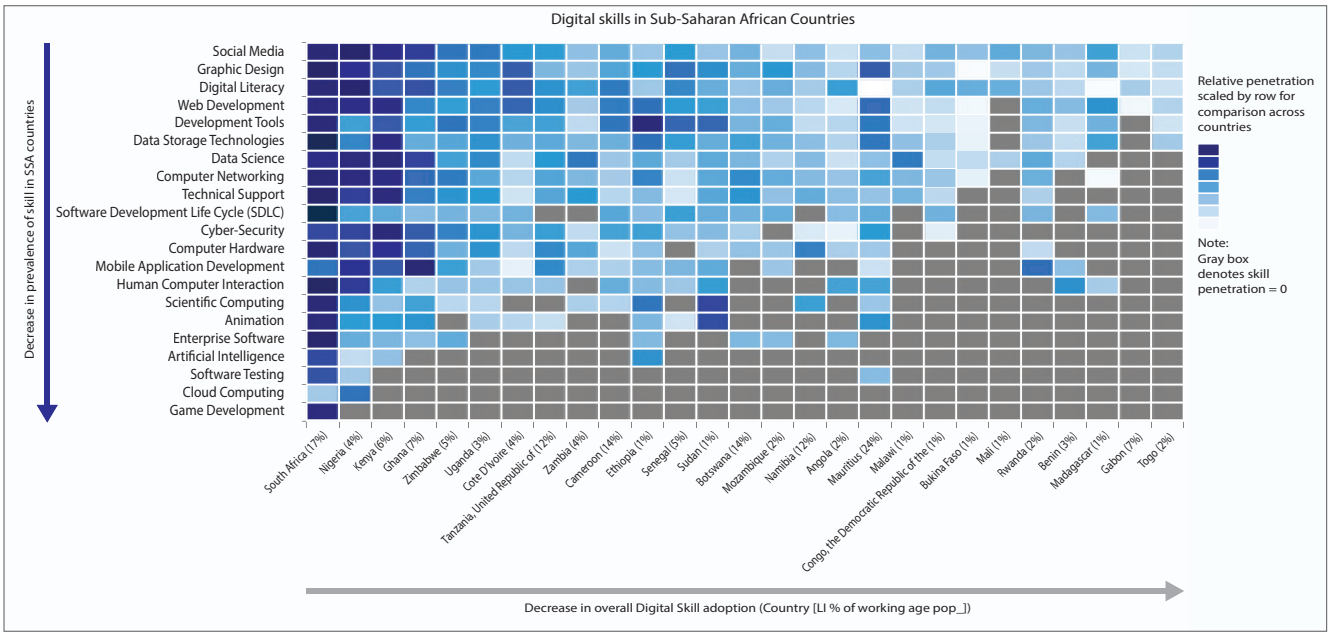
[30] While both primary and lower secondary school is mandatory, upper secondary school is not. While enrollment is near universal at primary level, it markedly drops at secondary school level. In 2017, a mere 38.13 percent of the school age population was enrolled at secondary level, based on 2017 UNESCO figures.

[31] Some 119,092 upper secondary students were enrolled in science, technology, engineering, and mathematics (STEM) subject in 2017, according to the Ministry of Education. However, figures for computer science majors are not readily available. See also Ministry of Education and AIMS. 2018.

[32] Ministry of Information Technology and Communications and Innovation. 2017. National Digital Talent Policy.

[33] Based on 2017 enrollment figures for TVET, on average, only 11 percent of all TVET students were studying ICT – which would be equivalent to 9,901 students. Yet, according to the Ministry of Education, only 327 students were graduating with a certificate, diploma or advanced degree in ICT from polytechnics in 2016 – equivalent to 16 percent of the total graduating cohort.

Figure 2.7: Digital skills benchmarking



Source: World Bank. 2019. Future of Work in Africa.
Note: WB staff calculation using LinkedIn data. Note that Rwanda only has a small population of LinkedIn users, which skews the sample. Data is notably also based on self-reporting. However, digital skills can be considered a pre-requisite for using LinkedIn, which make related data indicative of current digital skill acquisition levels. Here Rwanda emerges near the bottom of the ranking, with an estimated 2 percent overall digital skills penetration among the working age population, and clear gaps in more advanced digital skills competencies save for mobile application development.

in Rwanda[34], identifying by some 28 percent of employers.[35] Rwanda is thus outperformed by many other African nations in relation to overall digital skills acquisition in the workforce (Figure 2.7).

To address this, Government has sought to spearhead a series of innovative partnerships to expand access to basic and advanced digital skills training – both within and outside the formal education system. In 2017, it launched the flagship Digital Ambassadors Program (DAP), in partnership with the World Economic Forum (WEF) and the Digital Opportunities Trust, which aims to deliver basic digital skills training to some 5 million people.[36] Government has also partnered with for-profit training provider such as Andela[37] to offer rapid advanced digital skills training in coding, and sought to attract world-renowned academic institutions such as Carnegie Mellon University, which established its Africa campus in Rwanda in 2011. In early 2019, the Government launched the Rwanda Coding Academy, targeting TVET institutions.[38] Meanwhile, donor funding has helped launch a series of other smaller schemes such as WeCode[39]. While the private sector has also contributed to informal basic digital skills training[40], there is scope to do more in terms of crowding in the private sector, but also to expand existing schemes such as the DAP[41].

[34] World Bank. 2018. *Doing Business Survey*.

[35] World Economic Forum. 2018. *The Future of Jobs and skills in Africa*.

[36] The program aims to train 5,000 young Rwandans to serve as 'digital ambassadors', equipping them to deliver basic digital skills training in rural communities. Ministry of ICT & Innovation. 2018. *How Digital Ambassadors Program (DAP) Is Increasing Citizens' Digital Literacy.*

[37] See: https://andela.com/; KT Press. 2019. Andela Kigali – Build Software Engineering Talents To Suit Particular Local Needs.

[38] The Initiative was launched in Nyabihu District, targeting the TVET institute in the district and top-performing lower secondary school leavers in STEM. The Academy seeks to boost the number of digital specialists in areas where there is perceived to be weak supply – e.g. cyber security and software development.

[39] WeCode has sought to close the gender gap in the IT sector, by offers an 11-week programming bootcamp to young women and girls. The scheme is funded by the German Government. See: http://www.wecode.rw/

[40] One such example is Tigo, which launched the Mobile Internet Skills Training Toolkit (MISTT) with GSMA in June 2017. Over the course of three months the project trained 80,000 customers, through their network of sales agents and using freelancers, across 11 of Rwanda's 30 districts.

[41] As of June 2019, some 41,307 beneficiaries had been targeted by the scheme, trained by some 115 ambassadors.

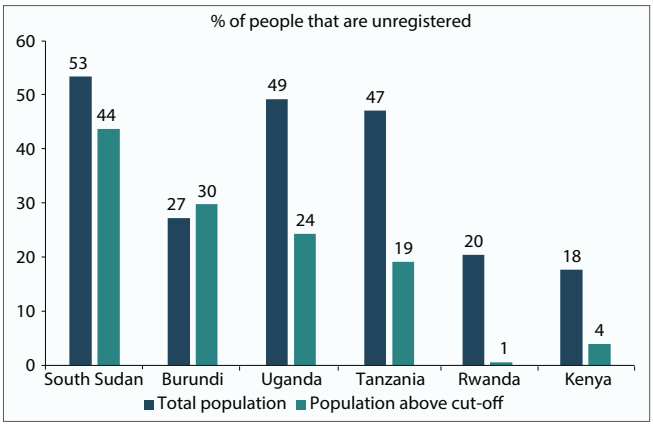
2.1.3. Digital Platforms

Rwanda has put in place many of the key building blocks needed to support government digitization, which has allowed it to quickly scale its e-service offering from a very low base.[42] Rwanda has made marked progress in terms of digitalizing public records, expanding the use of management information systems and rolling-out shared cloud-based infrastructure, enabling greater data exchange between various government entities. The development of Rwanda's e-government ecosystem has also benefitted from a robust and centralized institutional framework, the application of an innovative PPP with Online Rwanda Ltd to roll out new digital services, and development of critical enabling platforms such identification (ID). Rwanda has developed one of the strongest foundational ID systems in Africa, which today provided near universal (98 percent) ID coverage (Figure 2.8).[43]

Rwanda thus emerges as one of Africa's top ten performers in global e-Government rankings.[44] Today, the Government's Irembo platform provides access to a growing array of public Government-to-person and Government-to-business e-services.[45] Moreover, several back-end systems are improving the delivery of key government functions in areas such as financial management, public procurement, education and health. Rwanda has also introduced a foundational legal and institutional framework related to cybersecurity,[46] and has begun to revise its framework for data protection.

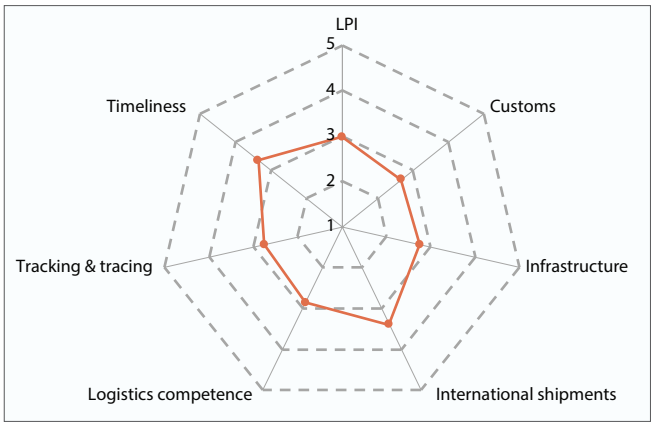
Nevertheless, uptake of public e-services remains rather modest, with most existing users preferring to access Irembo's services via agents and paying in cash for services rather than using the platform's digital interface and digital payment options.[47] A mere 1,500 users were accessing services via Irembo,

Figure 2.8: Regional benchmarking: Share of population that is unregistered



Source: World Bank. 2018. Identification for Development (ID4D) dataset.

Figure 2.9: The Logistics Performance Index 2018: Rwanda profile



Source: World Bank. 2018.

[42] E-services offered have increased from only five in 2015 to some 89 in 2018.

[43] National Identification Agency. 2019. Stakeholder interview.

[44] Rwanda ranks among Africa's top 10 performers, and is outperformed only by small island states, such as Mauritius, Seychelles and Cabo Verde, as well as upper and lower middle-income countries such as South Africa, Tunisia, Ghana and Egypt in the United Nations' E-Government Development Index (EDGI).

[45] Services offered inter alia include online visa/residency permit applications, online land management and ownership administration, and civil registration.

[46] A new cyber security law was introduced in 2018, which followed the introduction of a National Computer Security and Incident Response Team (Rw-CSIRT) in 2014, the adoption of a National Cyber Security Policy, and establishment of a National Cyber Security Authority (NCSA) in 2017.

[47] Some 54 percent still prefer to access the platform through an agent than via the web or mobile-based interfaces offered and 35 percent prefer to pay in cash.

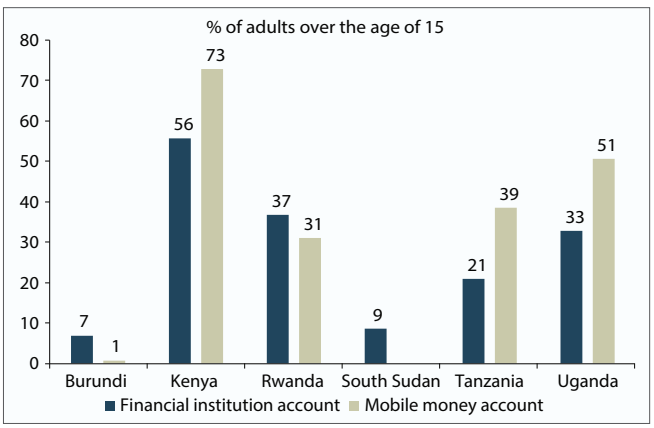
on a daily basis, in 2018.[48] Issues noted above, related to weak mobile phone ownership, limited internet usage, and gaps in digital skills, all help explain the relatively low usage figures, and dampen the use of platforms more broadly – particularly among those at the base of the pyramid who could benefit the most from access to critical public services.

The local e-commerce ecosystem is growing, but from a small base, with Rwanda ranking 19th in Africa in the 2018 UNCTAD Business-to-Consumer E-commerce Index.[49] Harnessing e-commerce as a more significant driver of growth will require tackling a number of interrelated challenges. Micro small and medium size enterprises (MSMEs), which dominate the local commercial landscape, have generally been slow to adopt online business practices. Many businesses and consumers remain wary of conducting business electronically, and often fail to see the potential benefits, in terms of facilitating access to new markets and services. Users are held back by both economic and knowledge barriers, including how to market goods and services online.[50] Goods-focused e-commerce companies in Rwanda also face growth challenges, due to the cost and reliability of last-mile postage, transportation and logistics services (Figure 2.9), the absence of a national addressing system, the speed and costs of customs[51], a culture of face-to-face transactions, and low transaction volumes. While some 'native' e-commerce platforms have emerged, helping to create a nascent online marketplace[52], e-commerce transactions in Rwanda are still minimal. Cross-border e-commerce is also growing but relies mostly on large foreign platforms such as Alibaba and Ali Express.[53]

2.1.4. Digital Financial Services

While usage of digital financial services (DFS) has been growing rapidly over the course of the last five years[54], led primarily by the adoption of MNO wallets, much of the potential remains untapped. Overall uptake of DFS remains rather low, when compared alongside neighboring Kenya and Uganda (Figure 2.10). According to Findex, only 31 percent of adults owned a mobile money account in 2017. MNO wallets are currently offered by the two main operators, MTN and Airtel[55], which are mainly restricted to basic transactions.[56] MTN leads the way in terms of spearheading further innovation, partnering with the Commercial Bank of Africa to

Figure 2.10: Penetration of financial institution accounts versus mobile money accounts



Source: World Bank. 2017. Findex.
Note: The latest Findex survey data from Burundi was collected in 2014. Mobile money adoption in Burundi is expected to be much higher than figures indicated here as it is known to have grown in recent years.

[48] According to Rwanda Online Ltd.

[49] The ranking looks at key enablers for e-commerce and Rwanda's low ranking is primarily due to limited internet usage, server access, and postage reliability.

[50] The New Times. 2018. What is holding back the uptake of e-Commerce in Rwanda?; All Africa. 2018. Rwanda: Why Jumia Rwanda Closed Its E-Commerce Platform.

[51] Uwamariya. Rosine. 2018.

[52] Insight2Impact. 2019. Africa's digital platforms database.

[53] Export.gov. 2019. Rwanda – Ecommerce

[54] National Bank of Rwanda (BNR). 2019. Stakeholder consultation.

[55] Who recently bought the third largest MNO, Tigo.

[56] Both provide access to as cash in/cash out, person-to-person (P2P) transfers, airtime purchase, bill payments, as well as transfers to and from bank accounts.

offer mobile savings and short-term loan service – yet, uptake of related services has been limited. There is thus ample room to grow MNO wallet adoption, increase transaction volumes/usage and expand the existing service offering, which could provide a meaningful way of boosting financial inclusion[57], but also facilitate the expansion of other e-transactions that rely on digital payments such as e-commerce. However, poor consumer awareness and weak merchant acceptance emerge as two critical issues that continue to hamper greater usage.

Banks are only just starting to enter the digital payments sector and have been slower to embrace digital channels and support innovation. Several banks[58] have, however, started offering services in mobile and online banking, and upgraded their core systems to provide open APIs that enable the development of more innovative products and services. While usage of related services continues to grow, it is yet to gain scale. For example, in late 2016, there were reportedly one million account holders using mobile banking services, performing some 4 million transactions annually. Moreover, although the number of ATMs and card-reading points of service has grown, a mere 5 percent of adults reportedly owned a debit card in 2016.[59] While existing DFS regulation and payments infrastructure, including the deployment of an integrated payment processing system and pending introduction of a national payments switch, have helped level the playing field and boosting interoperability between financial service providers (FSPs)[60], a handful of restrictions specific to banks continue to hinder banks' ability to fully participate and compete with other "non-bank" FSPs.[61]

2.1.5. Digital innovation and entrepreneurship

Government plays an active role in supporting the local innovation and entrepreneurship ecosystem, which still remains nascent. This has notably included efforts to build out critical support infrastructure for aspiring digital innovators, resulting in the introduction of the pre-incubator KLab, its sister-organization FabLab and the construction of the Kigali Innovation City complex that seeks to convene key ecosystems players. While related initiatives have been welcomed by the local tech community, stakeholder consultations revealed that the private sector has not yet grown enough to make the digital entrepreneurship ecosystem independent of government and donor funding. Meanwhile, there appears to be a limited pipeline of viable start-ups that can attract investment.

While Rwanda boasts a handful of successful digital start-ups, such as Zipline[62], existing start-ups typically face a number of challenges in terms of scaling their business. Firstly, there is limited support infrastructure for start-ups beyond a certain growth stage, including incubators and accelerators, which serve a crucial function in terms of facilitating access to skills, networks, mentorship, capital, technology and digital tools for start-ups. There is also weak access to growth-oriented financing for early-stage enterprises. Rwanda lacks many of the diverse funding channels available in more developed *entrepreneurial market*, such as venture capital funding, angel investors, and seed stage investment. While this appears to be changing[63] (Figure 2.11), there is room to build on Rwanda's favorable reputation for being an easy, safe and stable place to do business – encouraging more tech-

[57] DFS is considered the most successful means of increasing financial inclusion in emerging markets, as it empowers low-income populations to gain access to formal financial services, without the often costly and time-consuming task of visiting a physical bank branch.

[58] Including Bank of Kigali (BK), Equity Bank, Banque Populaire Rwanda (BPR), Ecobank, Cogebanque and Kenya Commercial Bank (KCB).

[59] BNR. 2019.

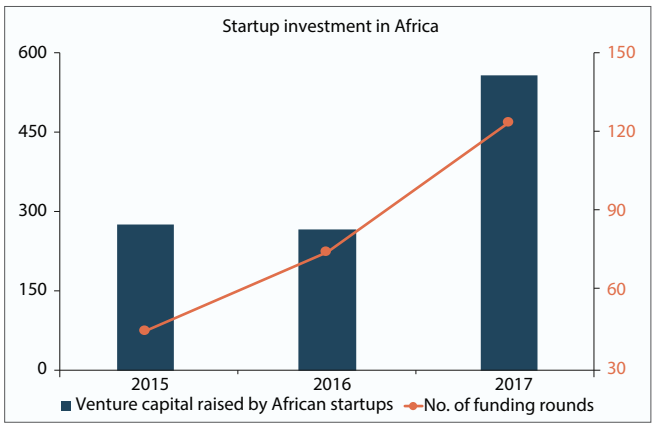
[60] Notably, the 2017 Agent Banking Regulation has sought to harmonize the requirements for bank and non-bank agents. For example, both banks and non-banks to become licensed mobile money providers. Moreover, the 2014 Interoperability policy, has helped connect several banks and MNO wallets.

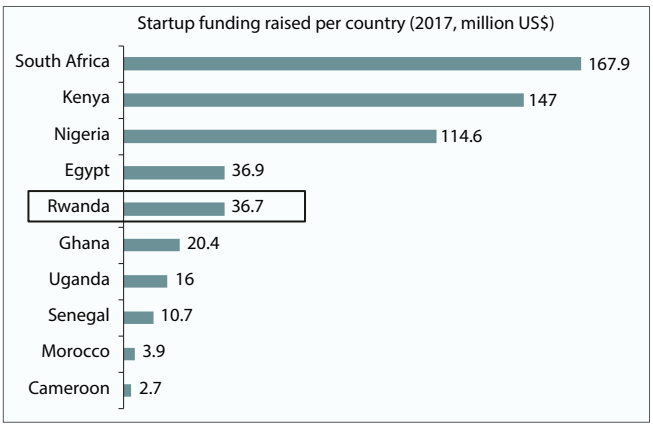
[61] These notably include regulation obliging banks to use in-house cloud hosting services and paper-based process for certain types of transactions.

[62] Fleming, Sean. 2018. In Rwanda, Drones Are Delivering Blood to Remote Communities. World Economic Forum.

[63] For example, Sweden's Norrsken Foundation — a co-working space and investment fund based in Stockholm — opened up a tech fund and entrepreneurship hub in Rwanda in June 2019 to support ventures across the region. TechCrunch. 2019.

Figure 2.11: Venture capital raised by African startups and amount of startup funding raised by select African countries





Source: Partech Ventures.

based firm to use Rwanda as their launchpad into East Africa.[64] Finally, weak local demand for digital product and services (detailed above), as well as Rwanda's intrinsic market size offers start-ups limited room to expand. Rwanda thus emerges as an easy place to set-up a business but a harder place to scale.

2.2. Securing Rwanda's Digital Future: Critical Reforms, Investments and Innovation Needed

Rwanda's digital development to date has been impressive, but lags in a number of areas which constrains the growth potential associated with increasing digital adoption. Rwanda emerges as a top performer on the continent in areas such as mobile networks coverage, e-government service expansion and access to ID. However, in other areas, such as digital skills, broadband and digital services uptake, as well as e-commerce, progress has been more modest. Meanwhile, gaps in digital skills and broadband penetration have spillover effects on many other aspects of the digital economy, and thus emerge as two binding constraints that affect prospects for further digitization. Finally, while government has been at the forefront of spearheading digitization and innovation, the private sector's contribution to Rwanda's digital economy has not been as robust. Moving forward, efforts to propel further digital transformation thus need to focus on addressing the following key areas, building on noteworthy progress made so far:

2.2.1. Expand interventions that boost demand for digital services

Rwanda's digital transformation to date has largely been supply-driven. As seen above, major public investments have, for example, boosted the supply of digital infrastructure and digital public services. Yet, the adoption rates of broadband and other digital services still lag, yielding a lingering digital divide where large parts of the Rwandan population still fail to the reap the digital dividends associated with greater access to broadband as well as other digitally-enabled platforms and services on offer. Weak demand also has ripple effects on supply, particularly on the private sector side, where companies are deterred from launching new digital platforms and services given the size of the current consumer-base. Efforts to increase the supply of digital infrastructure, platforms, services, and entrepreneurship thus need to be paired with more interventions that help drive greater demand.

Increasing demand, and creating a virtuous circle of digital adoption, will require a multi-pronged approach that tackles both digital literacy, affordability, quality and perceived relevance. There is room to grow digital service adoption by

[64] Rwanda ranks 5th, among African nation, in the World Bank's 2018 "Ease of Doing Business" report.

doing more to educate customers, equipping all Rwandans with the requisite basic digital user skills needed to participate in the digital economy, but also explaining how they can benefit from increased access and usage. The perceived value of internet and digital services needs to be addressed for more users to prioritize this as part of their routine household expenditures. Ultimately, both individuals and businesses, particularly those with very low incomes or profits, still need a compelling reason to invest their limited incomes into broadband services and smartphones, as well as their time and energy into developing the digital skills to make use of related services. In terms of affordability, there is also scope to do more to lower the cost of devices and data services. While Rwanda already benefits from a competitive telecoms market, new service packages could be better tailored to low-income households. Both government and the private sector could also explore means of incentivizing greater digital adoption through various schemes, including greater government usage of government-to-person digital payments etc.

Increasing adoption of digital services on the public sector side will also require greater attention to factors that enhance the user-experience. This includes adopting a more user-centric approach to e-service design, prioritizing the digitization of services that are more likely to boost uptake, based on user-feedback. There is also a need to ensure full end-to-end digitization. Evidence suggests that a requirement for physical presence at any stage of service delivery will dramatically reduce adoption and the perceived added value of that digital service. Similarly, there is a need to adopt 'ask once' data collection practices. This will need to be supported by further consolidation and use of cloud services, as well as the integration of existing government IT infrastructure, systems and services that help enhance interoperability and data sharing - supporting a whole-of-government approach to e-services. Related efforts are already underway. There is also a scope to increase innovation in services provision and delivery, by crowding in the private sector, through increasing access to open data and the creation of a vibrant API exchange marketplace.

2.2.2. Invest more in human capital to expand the digital skills base

Building Rwanda's digital skills base will not only be key to accelerating digital adoption, but critical to harnessing emerging opportunities, including new forms of employment,[65] as well as the development of new digitally-driven platforms and businesses. Greater access to advanced and high-end digital skills will, for example, be critical to the development of new home-growth technology-enabled solutions that are attractive to local consumers and investors. There is also substantial potential for job creation, stemming from greater technology adoption across all sectors and skill categories, particularly for unskilled and lower-educated workers, according to a recent World Bank study.[66]

However, addressing the basic and advanced digital skills gap through traditional approaches and the basic education system alone will be insufficient. While government is encouraged to ensure basic digital skills attainments among school leavers, through reforms and investments in the formal education system, it will be imperative to pair said development with other innovative, complementary schemes. Gaps that adversely affect the delivery of digital skills training in schools will need to be addressed. However, there is also ample scope to build on existing innovative schemes that are already being piloted, as well as explore new initiatives that crowd in non-profit and for-

[65] For example, in the emerging 'gig economy' or e-services industry. The service sector is projected to be the main driver of overall employment expansion in developing countries in the years to come, according to the ILO.

[66] World Bank. 2019. Future of Work.

profit providers of digital skills training at all levels. Alternative training delivery models can help supplement formal education, by bridging specific skills gaps, supporting skills upgrading for adults, and targeting neglected groups such as out-of-school youth. Greater private sector engagement on the digital skills agenda in Rwanda could result in a win-win, where training yields greater services uptake, and closer links between industry and academia helps create a more relevant and demand-driven curriculum, expanding access to hands-on training, and ultimately improving the quality of the graduate pool with advanced digital skills.

2.2.3. Encourage more private sector led digital economy growth

While Government has spearheaded an ambitious digital agenda, uptake and development of digital products and services among local businesses has been far more muted. For Rwanda's digital evolution to become transformational, the private sector needs to play a far greater role in spearheading digitization, through both increased technology adoption and support for innovation. So far digital adoption has been slow to permeate key sectors, and uptake among MSMEs has been modest. For example, greater merchant acceptance of DFS could help unlock further growth of fintech, and much more can be done to extend the benefits of DFS to MSMEs more generally by incentivizing uptake. Where MSMEs typically find access to credit to be a significant challenge, DFS can also offer a potential solution. Bringing more MSMEs online can also increase opportunities for startups to offer digitally enabled business applications, as well as gradually increase local e-commerce.

Building a more vibrant digital entrepreneurship ecosystem will be key to supporting digital innovation on the private sector side. Attracting a number of world-class, international accelerators would, for example, greatly strengthen the local entrepreneurship ecosystem, supporting firms to move from startups to growth. More can also be done to bridge the existing financing gap for entrepreneurs by establishing alternative financing mechanisms through a sovereign wealth fund and/or credit guarantee scheme, as well as continuing to engage in proactive outreach to encourage increased investments. Key legal and regulatory frameworks would benefit from further review, including those pertaining to investor protection and insolvency procedures where Rwanda fairs worse than its peers. Rwanda could also help foster a greater culture and appetite for innovation by doing more to showcase innovative ideas and celebrating entrepreneurs, as well as strengthening the business acumen of aspiring entrepreneurs through more opportunities for training.

Areas that restrict growth in e-commerce will also need to be addressed, through an integrated government strategy. This should ideally support modernization of the postage system, creation of a functioning addressing system, expansion of existing transportation and logistics networks, as well as cross-border trade and customs facilitation. Agile pro-competition regulation is also needed to support a vibrant platform-based economy. This is particularly important in smaller markets like Rwanda, where foreign firms can more readily dominate the local market.[67] While new innovative partnerships that seek to enable e-commerce expansion, such as the Alibaba-led Electronic World Trade Platform, can have positive effects for local MSMEs in the short-term, caution is warranted to avoid exclusivity of such arrangements that may curtail competition in the long-term.

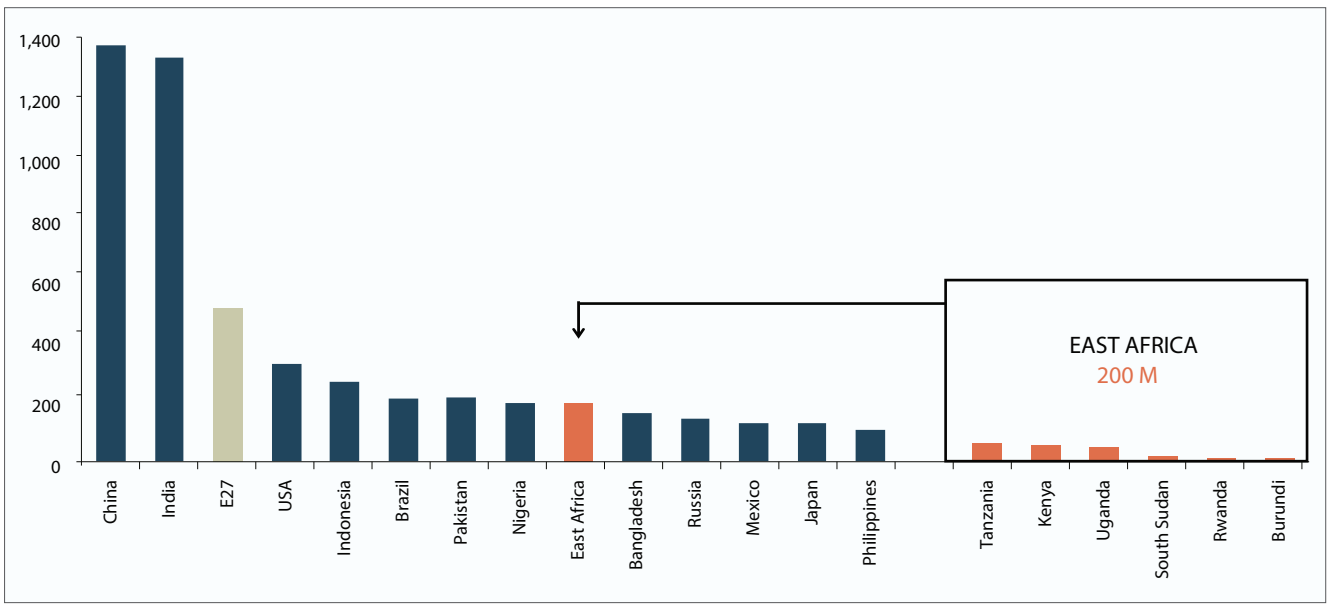
[67] Winner-takes-all dynamics are typical in platform-based economies, where network effects benefit first movers and standard setters. See: Rossotto et al., 2018. Digital platforms: A literature review and policy implications for development. Competition and Regulation in Network Industries 1-17.

2.2.4. Support regional integration of digital markets

Rwanda needs the scale of a larger regional market to thrive and compete in the digital economy, as well as attract more private sector investment. Given that digital platforms become exponentially more valuable the more users and data they generate, there is a strong imperative for digital firms to quickly scale. Accelerating digital market integration within East Africa, and beyond, can thus help provide seamless opportunities for both Rwandan start-ups and foreign digital firms to scale, while benefitting from friendly and enabling environment in Rwanda to set up their businesses. With 180 million citizens, an East Africa Single Digital Market (SMD)[68] could, for example, provide the market size to allow Rwanda to compete and position itself as a regional hub and test-bed for innovation poised for scale-up. An integrated East African Digital Market would be the 9th largest in the world and the World Bank estimates that implementing an SMD 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.[69]

An integrated digital market could help remove price differentials between costal and landlocked countries, lowering prices for Rwandan consumers. As a small, landlocked country, Rwanda must rely on its coastal neighbors to access international broadband capacity, with corresponding mark-ups in pricing. The One Network Area (ONA) initiative, which removed roaming surcharges and capped prices for mobile calls across participating East African countries in 2015, paints a picture of what is possible, in terms of digital market integration. The introduction of ONA prompted a dramatic increase in cross-border voice traffic.[70] Expanding the ONA concept to more countries and to more services, such as mobile money, facilitating cross-border payments, could also help increase regional e-commerce.

Figure 2.12: East Africa is the 9th largest global market by population



Source: A Single Digital Market for East Africa, World Bank, 2018.

[68] East Africa is defined as the six member states of the East African Community – Kenya, Burundi, Rwanda, South Sudan, Tanzania and Uganda.

[69] World Bank. 2019, A Single Digital Market for East Africa. See: http://documents.worldbank.org/curated/en/809911557382027900/A-Single-Digital-Market-for-East-Africa-Presenting-Vision-Strategic-Framework-Implementation-Roadmap-and-Impact-Assessment

[70] The ONA resulted in a nearly 1000 percent increase in calls between Rwanda and Kenya in just a few months. Overall, cross-border voice traffic experienced a threefold increase in Rwanda in the wake of ONA. See: Kelly, T., and C. Kemei. 2016. WDR 2016: Digital Dividends; A Case Study of ONA. ITU. Available at http://pubdocs.worldbank.org/en/499731452529894303/WDR16-BN-One-Network-Area-in-East-Africa-Kelly-Kemei.pdf and https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-EF.ONA-2016-PDF-E.pdf.

Box 2.1: Creating Single Digital Market

Creating a Single Digital Market will require efforts to develop three interrelated sub-markets:

- **A single connectivity market**, which would remove barriers to regional telecoms infrastructure and services deployment to encourage investment, improve performance, eliminate pricing and quality differentials between coastal and landlocked countries, as well as expand access to connectivity to all.
- **A single data market**, which would enable secure exchange, storage and processing of data across borders to support regional deployment and access to data-driven services and innovation.
- **A single online market**, which would allow government, firms and citizens to access and deliver both public and private services online, as well as make online purchases seamlessly from anywhere in the region.

2.2.4. Build a secure online environment

As usage of digital services increase, ensuring the security of online transactions and safety of end-users will be key to boosting trust in related services, and reinforcing digital adoption. Notably, the emergence of the digital economy has created a need for fully digital identity credentials. These include digital ID and other 'trust services', such as e-signatures, which are required to ensure secure and accurate identification and authentication for transactions over the internet. Rwanda is well-positioned to capitalize on its robust 'traditional' ID ecosystem to develop a 'next generation' digital ID system that enables seamless identity verification and online authentication services.

Moving forward, Rwanda will also need to build on existing cybersecurity capability as well as adopt a robust data protection regime. This means boosting institutional, technical and human resources capacity related to cyber security - possibly through greater regional collaboration that offer opportunities for cost savings through sharing of threat intelligence and human expertise. Pending legal provisions related to data protection and privacy will need to be finalized and enacted to provide holistic and clear guidelines for the safe collection, processing, use and sharing of data. However, boosting security should not come at the expense of overly restrictive data localization policies[71], impeding cross-border data exchange, processing and storage that are critical to cloud-based services and movement towards an integrated regional data market[72]. Related provisions would limit the attractiveness of Rwanda as a datacenter investment destination as well as raise the costs of cloud services and storage for local startups and businesses that increasingly rely on related services to go digital.

2.3. Conclusion

Following the tested, "traditional" approaches to socioeconomic development will continue to bring steady improvements. While this is important, given Rwanda's low starting point, an incremental approach alone will still deny far too many of today's youth from realizing their potential. Instead, the country is making a bold bet on a digital future to accelerate this transformation and is choosing to champion the 'digital agenda' both locally and on a pan-African level. Government has set out an ambitious vision to leverage technologies and digitally-enabled business models to tackle key development challenges related to poverty and basic public service delivery in new and more effective ways and to harness a unique opportunity to transform the development trajectory for government, society and the wider economy.

[71] That require data on local citizens to be processed and stored physically within Rwanda's borders.

[72] To take one example, in 2017, MTN Rwanda was fined US$8.5 million by RURA (10 percent of its annual turnover) for maintaining Rwandan customers' data in Uganda. Rwanda has also introduced a law that obliges government MDAs to maintain a cache of their data within national borders.

Rwanda can build upon its strengths to achieve its ambitious digital transformation vision, if issues highlighted above are addressed. These include strong leadership commitment and institutions, advanced network infrastructure investments, a business and innovation friendly reputation and a strategic position in East Africa. The progress in building up the country's digital infrastructure, institutions and enabling environment over the past decade has been remarkable but has yet to translate fully into impact for the average citizen or from a wider macro-economic perspective. An acceleration and deepening of efforts is thus needed to bring the expected dividends: a dynamic, inclusive digital economy that drives economic growth and new job creation and provides access to high quality digitally-enabled services, information and opportunity for every Rwandan.

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