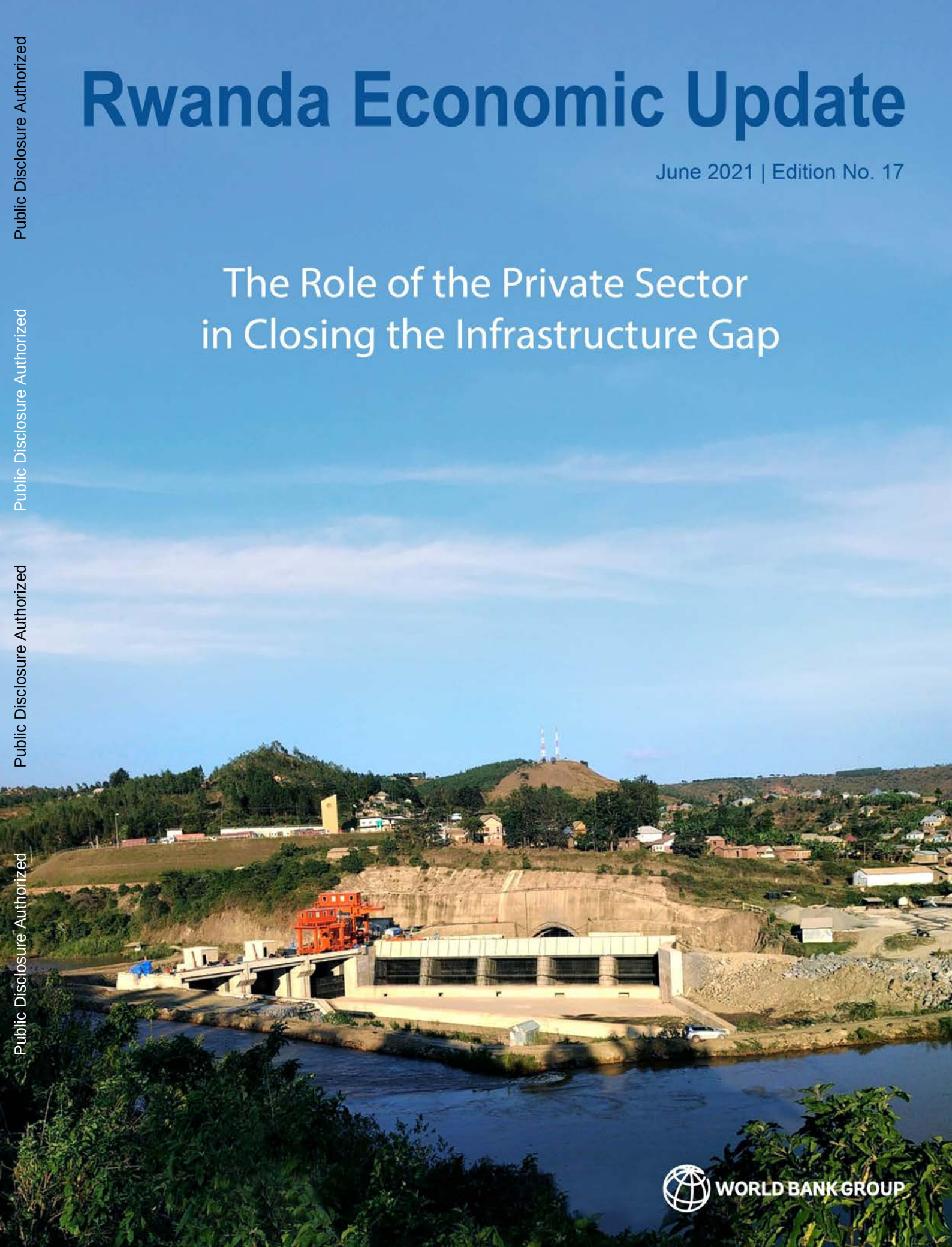
Rwanda Economic Update

June 2021 | Edition No. 17

The Role of the Private Sector in Closing the Infrastructure Gap



WORLD BANK GROUP

Rwanda Economic Update

The Role of the Private Sector in Closing the Infrastructure Gap

June 2021

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ACRONYMS

AfDB	African Development Bank
CAD	Current Account Deficit
CBR	Central Bank Rate
CGE	Computable General Equilibrium
CPI	Consumer Price Index
DSA	Debt Sustainability Assessment
DSSI	Debt Service Suspension Initiative
ERF	Economic Recovery Fund
ERP	Economic Recovery Plan
FCCL	Fiscal Commitments and Contingent Liabilities
FDI	Foreign Direct Investment
FY	Fiscal Year
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GEP	Global Economic Prospects
HCI	Human Capital Index
HIPC	Heavily Indebted Poor Countries
ICT	Information and Communication Technologies
IMF	International Monetary Fund
KCC	Kigali Convection Center
LICs	Low-Income Countries
MDB	Multilateral Development Banks
MBRP	Manufacture and Build to Recover Programme
MICE	Meetings, Incentives, Conferences/ Conventions and Events/exhibitions
MINECOFIN	Ministry of Finance and Economic Planning
MPC	Monetary Policy Committee
NBR	National Bank of Rwanda
NISR	National Institute of Statistics of Rwanda
PER	Public Expenditure Review
PPG	Public and Publicly Guaranteed
PPI	Private Participation in Infrastructure
PPP	Public-Private Partnerships
RDB	Rwanda Development Board
REU	Rwanda Economic Update
Rwf	Rwandan Franc
SDGs	Sustainable Development Goals
SOEs	State-Owned Enterprises
SSA	Sub-Saharan Africa
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNWTO	United Nations World Trade Organization
US$	United States Dollar
USPs	Unsolicited Proposals
VAT	Value-Added Tax

ACKNOWLEDGMENTS

The Rwanda Economic Update (REU) analyzes recent economic developments and prospects, as well as Rwanda's policy priorities. The REU is intended for a wide audience of policymakers, business leaders, other market participants, analysts of Rwanda's economy, and civil society. It 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.

Published twice a year, each issue has a special feature spotlighting a particular topic. The 17th edition of REU focuses on the role of the private sector in closing the infrastructure gap. The current edition, led by Calvin Zebaze Djiofack and Peace Aimee Niyibizi, is a collective endeavor and involved staff from several parts of the World Bank and IFC. The team includes Stephan Dreyhaupt (Principal Economist, CAFCE, IFC); Zivanemoyo Chinzara (Economist, CAFCE, IFC), Hasan Dudu (Economist, EMFMD), Lulit Mitik Beyene (Consultant), Erwin Tiongson (Consultant), Craig Sugden (Senior Public Private Partnerships Specialist, IPGPP); Karen Coulibaly (Consultant); Vera Kehayova (Consultant); Vasilis Tsiropoulos (Economist, EMFMD), Sebastian Michael Essl (Economist, EMFMD); Eloise Obadia (Consultant, EFICI); William Shaw (Senior Consultant), Vincent Launay (Senior Infrastructure Finance Specialist, IPGFG); Luca Bandiera (Senior Economist, EMFMD); Charl Jooste (Senior Economist, EMFMD), Juan Carlos Parra Osorio (Senior Economist); Rakesh Gupta Nichanametla Ramasubbaiah (Consultant); and Gabriela Inchauste (Senior Economist). Servant Jacques Bleindou and Evans Kamau (Investment Officer) provided invaluable comments on the private sector financing analysis in Rwanda. The team is very grateful to Philip Schuler and Allen Dennis for additional inputs on the structure and messaging of the report.

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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

Economic developments

The COVID-19 pandemic drove Rwanda's economy into its first recession since 1994. Gross domestic product (GDP) fell by 3.4 percent in 2020, compared to an expansion of 8 percent anticipated before the COVID-19 outbreak. Domestic and global restrictions to contain the pandemic severely interrupted economic activities, and depressed exports, private investment and consumption. Travel and tourism were brought to a near halt, mining and construction value added dropped sharply, and manufacturing fell in the first half of the year. Agricultural production dropped due to poor weather in Season A (December 2019 to February 2020), but the harvest was good in the second and third seasons. The current account deficit deteriorated in 2020, but by only 0.3 percentage points of GDP (the trade deficit widened by 2.3 percentage points of GDP—the fall in imports was less than the fall in exports—but the primary and secondary balances improved). GDP increased by 3.5 percent year-on year in the first quarter of 2021, as services output continued to decline but industrial and agricultural output rose. The unemployment rate fell in the first quarter of 2021, but likely because discouraged workers left the labor force, as labor force participation dropped by about 5 percentage points.

Authorities acted purposefully to sustain economic activity during the crisis. The National Bank of Rwanda (NBR) maintained an accommodative policy stance to support the economic recovery and adequate liquidity to the financial sector. By end-2020 the financial position of the banking sector remained sound, although banks have been cautious in extending new loans. The Economic Recovery Plan (ERP), which was initiated in April 2020 to mitigate the economic impacts of COVID-19, is estimated at US$900 million over the May 2020-December 2021 period, or about 4.4 percent of GDP on average per year. The fiscal deficit widened to an estimated 9.1 percent of GDP in FY2019/20 and 10.2 percent of GDP in the first half of FY2020/21. Foreign borrowing, much of it concessional, more than financed the deficit.

The pandemic will continue to constrain recovery. GDP growth is projected to remain below the pre-pandemic average through 2023, as uncertainty concerning the course of the pandemic limits investment, travel restrictions and fear of travelling constrain tourism, and labor market weaknesses weigh on private consumption. The current account deficit is expected to remain between 11 and 13 percent of GDP until 2024 due to an acceleration of imports, financed through borrowing and some reserve drawdowns. Fiscal expansion is slated to continue into FY2021/22, but the government has signaled a commitment to fiscal consolidation once the crisis abates. The major risk to even the subdued recovery envisioned here is further delays in obtaining sufficient vaccines coupled with a resurgence of the virus driven by more contagious variants.

Debt sustainability

Rwanda's fiscal space has narrowed considerably. The COVID-19 crisis has boosted fiscal needs and public debt. Fueled by a large primary deficit, reflecting COVID-related expenditure as well as revenue shortfalls, public gross financing needs are expected to have reached roughly 15 percent of GDP in 2020, nearly double the average financing needs between 2015 and 2019. Public and publicly guaranteed debt is estimated to have increased from 62.9 percent of GDP in 2019 to 71 percent in 2020—about 10 percentage points higher than pre-crisis projections—and is expected to rise to 84 percent of GDP in 2023. Rwanda's debt is largely concessional, although the issuance of a US$400 million Eurobond in 2013 increased debt service obligations. Rwanda's risk of external debt distress was downgraded from low to moderate in the

2020 IMF/World Bank debt sustainability analysis, and the country is now at risk of being further downgraded were another major shock to hit the country.

Financing public investments

Rwanda has had a high rate of public investment over the past few years equaling 13 percent of GDP in 2019. The share of public sector capital expenditures in GDP from 2015 to 2018 was higher in Rwanda than in most East African countries, and almost double the average share in Sub-Saharan Africa. Rwanda's public investment spending is third highest in the world as a share of GDP (after Timor-Leste and Afghanistan) and highest as a share of total public spending. One important goal of public investment was to support the government's strategy to establish Rwanda as a major center for meetings, incentives, conferences/conventions and events/exhibitions. The quality of, and access to, infrastructure services, as measured by the Global Competitiveness Index (GCI), had improved by 2019, although comparisons with peers shows significant variation by sector. The overall infrastructure quality score is 52, compared to an average score of 45 for Sub-Saharan Africa (SSA).

Despite large investments, Rwanda needs to increase infrastructure investment further to achieve its development goals. Infrastructure investment would have to rise by 8.4 percent of GDP from 2019–24 and 6.9 percent of GDP from 2024–40 (relative to the 2007–15 average) to meet the government's goal of 6.5 percent annual real GDP growth and to achieve the Sustainable Development Goals (SDGs). The main source of the infrastructure investment gap stems from the transport, electricity, telecom, and water sectors, despite the fact that Rwanda in the recent past has allocated more resources to these three sectors than most other countries in Africa. Further increases in infrastructure investments will need to pay greater attention to quality and efficiency, while at the same time efforts will be needed to improve the productivity of existing investments.

Looking ahead, official sources of finance will not be sufficient to close Rwanda's infrastructure financing gap. Results from a Computable General Equilibrium (CGE) model show that if the entire increase in infrastructure investment were financed by borrowing, public debt would increase from 73.4 percent to 132 percent by 2030 in the baseline scenario, while the country's medium term debt target is 65 percent of GDP. On the other hand, if the increased infrastructure investment required to meet the SDGs is met by grants, foreign grants would need to increase between two to three times their level in the baseline in each year, which is unrealistic. To fill the gap entirely from tax hikes, tax revenues would have to rise from 14 percent of GDP in 2040 in the baseline to 22 percent of GDP, which is also unrealistically high, would have important implications for incentives, and may not be easily collected. The model's findings show that increasing infrastructure investment through domestic revenue mobilization yields lower outcomes for households and the economy as a whole compared to grants and private sector financing sources, because higher taxes tend to reduce the domestic savings available for productive private investments. Improving the efficiency of resource would be needed to complement efforts to increase the availability of public resources devoted to infrastructure.

The current infrastructure development model has important distributional implications. The rise in household welfare relative to the baseline is significantly higher in urban than in rural areas across all foreign and domestic financing scenarios. A hypothetical increase in infrastructure financing of one percent of GDP based on the current investment pattern, supported by grants, would increase output in services by 4 times and output in manufacturing by 2.6 times, the increase in agriculture. This reflects the experience in Rwanda that currently major investments are more linked to urban activities than rural ones.

Private sector participation in infrastructure

Increased private sector investment in infrastructure will be essential to obtain sufficient resources. If official sources of finance were increased to their maximum level based on likely donor decisions (grants), debt sustainability (borrowing) and domestic economic considerations (taxes), they would provide only about 45 percent of the resources required to fill the gap. Thus, private infrastructure financing would have to increase sharply from its current share of about one-third of total infrastructure commitments. If an increase in infrastructure investment equivalent to 1 percent of GDP were to come from public-private partnerships (PPPs), then GDP would be 1.7 percent higher than baseline in 2030 and 1.4 percent higher in 2040, roughly equivalent to the increase if the additional infrastructure is financed through grants. The rise in employment and household consumption also would be practically the same as in the latter scenario.

Foreign direct investment (FDI) has played an important role in building Rwanda's infrastructure. Rwanda's private sector commitments into infrastructure (as a percent of GDP) have been higher than those of regional structural comparators, and have been close to the best performers of the regional aspirational comparators. Total FDI inflows rose from US$119 million (2.2 percent of GDP) in 2009 to US$420 million (4.1 percent of GDP) in 2019. Inflows as a share of GDP exceeded the level in Rwanda's structural comparators and were higher than the Sub-Saharan Africa average. In 2018, the stock of FDI in the two main infrastructure sectors that benefited from FDI inflows (electricity and ICT) equaled 40.1 percent of the total FDI stock. FDI inflows to infrastructure sectors totaled US$235 million in 2018, or 62 percent of total FDI inflows.

Most private sector participation in infrastructure in Rwanda has been in the form of PPPs. Rwanda's long track record in PPPs shows that the institutional and regulatory framework has been working. The World Bank Private Participation in Infrastructure (PPI) Database identifies six transactions to 2015 prior to approval of the PPP Law in 2016, all in the energy sector, for a total investment of US$516 million. Ministries and government departments identified more PPPs prior to approval of the PPP Law in 2016; a total of 39 closed transactions. Of these, 29 were in the energy sector including micro hydro projects. PPPs were also undertaken in other sectors and at the municipal level, including three in ICT, one in manufacturing, and six in mining projects. All the early PPPs were processed and procured on a project-by-project basis drawing on sector and/or project-specific legislation.

The government of Rwanda has made good progress in establishing an appropriate institutional and regulatory framework for PPPs through passage

of the 2016 PPP Law and issuance of PPP guidelines in 2018. The new PPP framework (2016 PPP Law) has successfully delivered more than 24 PPPs in ICT, energy, transport and logistic, hospitality, and housing, generating a total infrastructure investment of more than US$900 million. Rwanda's PPP framework nonetheless has received mixed reviews in World Bank global ratings, with good scores for PPP preparation and procurement, but poorer scores for contract management and in relation to unsolicited proposals (USPs).

Policy options

Maintaining public debt at sustainable levels is key to reducing the country's vulnerability to external shocks and liquidity pressures and their spillover effects on PPI. Rwanda's subprime status and increased risk of debt distress dampen the appetite of international investors. While expansionary policies are necessary to mitigate the impact of the pandemic, over the medium-term increased revenues and improved expenditure control is necessary to ensure sustainability and to manage the country risk. Steps to strengthen revenue mobilization include unwinding tax measures undertaken to mitigate the impact of the crisis and the development and implementation of a medium-term revenue strategy (including a VAT gap analysis). Rwanda also could generate more resources for infrastructure projects by enhancing private sector participation in existing public infrastructure assets. Unexpected fiscal costs to cover SOE losses underline the need to foster SOE debt transparency and strengthen fiscal risk assessment and management strategies of SOEs.

Further efforts to boost efficiency in public investment is key to fostering growth and achieving long term fiscal sustainability in Rwanda. The Public Expenditure Review (PER) that the government is now conducting, jointly with the World Bank, offers a platform to evaluate ways to streamline and rationalize the pipeline of investment projects, set criteria for prioritization, and identify sources of savings.

Government efforts to attract more private financing for infrastructure could take various forms. Getting state-owned enterprises (SOEs) on a financially sustainable path could enable them to access commercial loans or bond markets on the basis of their own balance sheet. However, given the difficult macroeconomic environment some form of credit enhancement will be required to attract private investment, notably for projects that are structured around government obligations. Risk sharing facilities that would absorb a percentage of the losses on loans made to private projects, funded either through concessional borrowing from multilateral development banks (MDBs) or through a MDB guarantee, could encourage infrastructure financing from the local banking sector. Pure private provision of infrastructure is also possible when there is competition among providers or effective regulation of monopolies. Private investors would often take more risk than under a PPP, and this can lessen the need for government fiscal commitments. Starting early to strengthen the regulatory framework, and restructuring and deregulating industries where appropriate, so that pure private provision is possible, could pay Rwanda good dividends. Electricity generation and social housing are potential candidates.

Further institutional reforms would help Rwanda to attract more PPI in both the medium and long term. Econometric analysis indicates that strengthening institutions that improve the quality of the regulatory framework would be most important. This would involve putting in place institutions and mechanisms that enhance the quality of public investment management, for example, better project planning, selection and execution, effective procurement systems, and quality assurance systems for infrastructure. Bolstering the state's capacity to fight corruption would have the next greatest impact in attracting private sector flows. Strengthening institutions that build an effective public sector and enhance the ability of citizens to hold the government accountable are also important for attracting PPI.

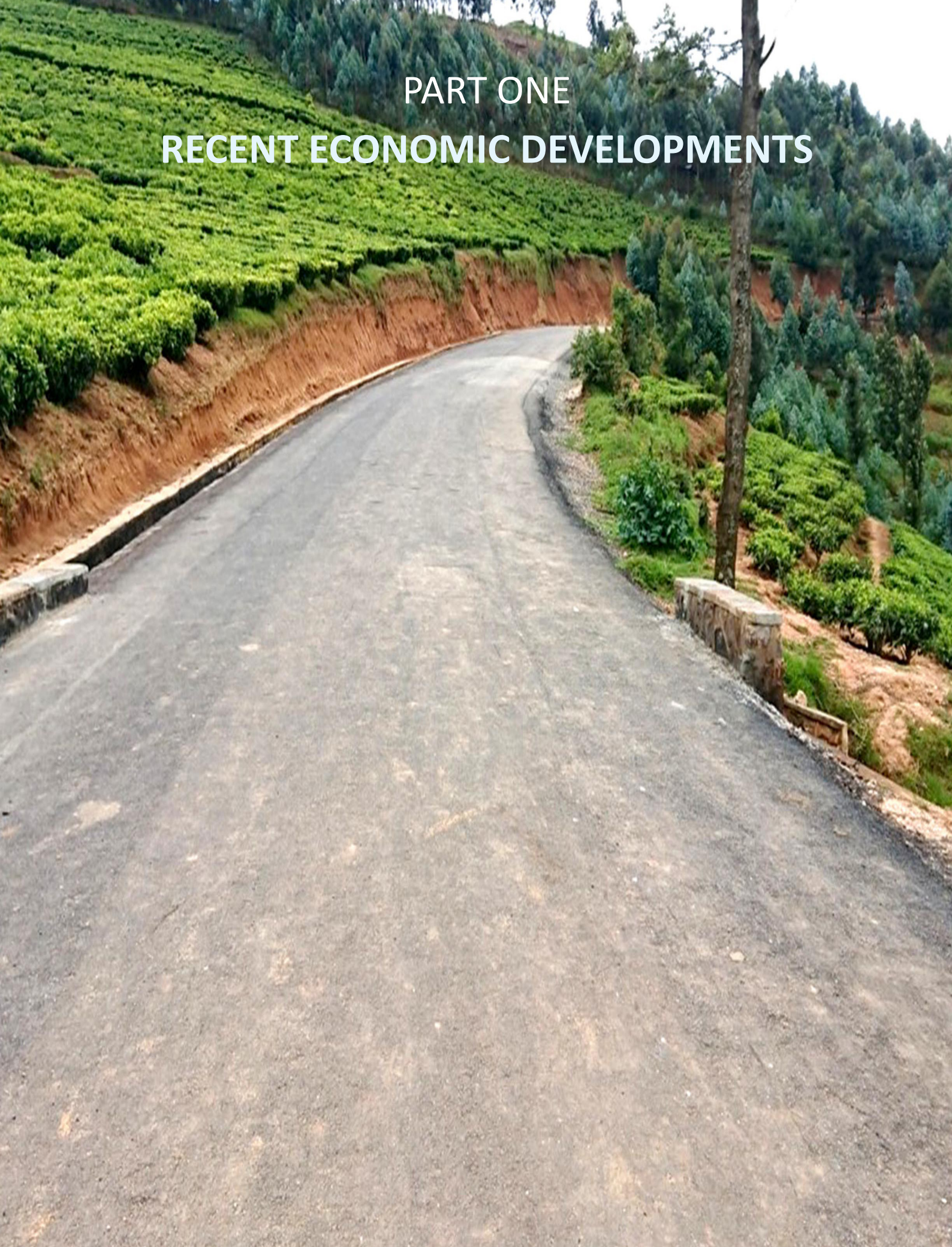
Although Rwanda has made impressive progress in strengthening the institutional and regulatory framework for PPPs, further efforts are needed. This includes (i) narrowing the criteria for initiation of a PPP project via an unsolicited proposal and, to the extent feasible, subjecting such projects to competitive bidding; (ii) strengthening the management of PPPs by increasing standardization and uniformity across PPP contracts and enhancing contract management practices, (iii) strengthening linkages between the public investment management and PPP frameworks; (iv) improving the control of government fiscal commitments and contingent liabilities (FCCL) from PPPs; (v) deepening access to long-term finance by easing obstacles to project finance faced by commercial banks and the Rwanda Social Security Board, and designing innovative financing mechanisms to crowd-in domestic and regional funds and other investors; (vi) strengthening engagement with stakeholders; and (vii) building capacity within government in designing, negotiating and managing PPPs.

A robust, multisector PPP project pipeline is needed. The transport, water and sanitation, waste management, irrigation, and housing sectors can be immediate focus areas for PPPs, given clearly identified service needs in these sectors. The logistics sector could be another area where PPPs can offer value for money. The development of the PPP pipeline must take place in the context of improving the public investment management system. Multilateral and bilateral agencies and global project financing facilities could be involved in both partly financing PPPs and funding the high costs of project preparation. While further analysis is required, diversifying from debt-financed project financing to include more equity and innovative financing instruments could be useful.

Efforts to attract FDI could be strengthened. Attracting FDI through deal accelerator and investment marketing should be continued, selecting some of the priority sectors by phases. Investor outreach efforts could be expanded. RDB's recently-deployed investor relationship management system (CRM) could be used to compile all challenges reported by potential investors. This would help the RDB in identifying systemic issues to be addressed by legal/regulatory reforms or changes in government conduct. In awarding special treatment/incentives beyond what is provided by the law and for the additional incentives provided to strategic projects, Government/RDB should be mindful of the costs of incentives and should include provisions to review their effectiveness on a regular basis. Efforts at promotion, and the efficiency of investment, would be assisted by regulatory impact assessments and consultations on new regulations, to avoid any unnecessary negative impact on a large number of investors.

Rwanda's efforts to resolve investor disputes have improved, although closer monitoring of projects could help to avoid disputes. Some issues or termination of contracts (including PPPs) arise from the delays or poor performance by the developers. For example, breaches of some renewable energy contracts have been related to delays by developers in commissioning their plants, imposing additional costs on the public sector agency involved. And changes in the specifications of some powerplants have resulted in construction of excess capacity, requiring the renegotiation or amendment of the power purchase agreement, thus costing additional time. Careful monitoring of progress in projects is essential to identify problems as they emerge, so that developers can resolve them before they become full-blown disputes.

Rwanda needs to rebalance its current investment model to address the declining trend of the growth elasticity of poverty in recent years. The country will need to rebalance its investment strategy from prioritizing large strategic capital-intensive projects toward projects critical for broad-based social returns. Estimates show that if Rwanda were to comply with the Malabo Commitment, and allocate 10 percent of the future infrastructure investment to agriculture, allied activities and rural infrastructure, then rural households would experience substantial gains, leading to a decline in inequality and poverty.



PART ONE
RECENT ECONOMIC DEVELOPMENTS

1.1. Global and Regional Context

COVID-19 continues to spread despite vaccine deployments. By mid-June 2021, the number of confirmed cases reached about 177 million and deaths about 3.8 million, with India reporting more than 40 percent of new daily global infections since mid-April.[1] Sub-Saharan Africa has recorded so far a smaller number of confirmed cases and deaths compared to the rest of the World. Vaccinations have increased substantially since their first use in December 2020, but new virus mutations and the accumulating human toll continues to raise concerns. However, with the emergence of new variants and the slow pace of vaccinations, SSA is now more vulnerable to the virus. Only 1.0 percent of the region's population had received at least one dose of a vaccine by June 15, 2021.[2]

The global economic recovery has gained momentum. After contracting by 3.5 percent in 2020, the global economy is now projected to expand by 5.6 percent in 2021—stronger than the 4.5 percent growth anticipated at the beginning of the year and the strongest post-recession pace in 80 years.[3] The rebound, that began in late 2020 due a solid rebound in China, is now being powered by a fiscal-driven surge in the United States as well as firming activities across other major advanced economies. The recovery in global activity and in commodity prices is also contributing to this. Most of commodity prices are now above their pre-pandemic levels as the global trade continues to improve. Merchandise trade has already surpassed precrisis levels, both in volumes and prices. Prices of Rwanda's main export items, coffee, tea and tin, have also recovered. For instance, tin prices surged by more than 70 percent on average in the first half of 2021, reaching a 10-year high in May, lifted by buoyant demand for tin-solder in consumer electronics as well as supply disruptions due to lockdowns and production cuts in tin-producing countries.[4] However, consumption and exports of services—especially travel and tourism—remain constrained by restrictions on international travel.

Sub-Saharan African economies are likely to recover at a modest pace. Economic activity in the region is estimated to have contracted by about 2.4 percent in 2020, the region's first recession in a quarter century. In 2021, the region is expected to expand by a modest 2.8 percent, mainly driven by positive spillovers from strengthening global activity, better international control of COVID-19, and strong domestic activity in agricultural commodity exporters. Nevertheless, the recovery is likely to be fragile, given the legacies of the pandemic and the slow pace of vaccinations in SSA. In a region where tens of millions more people are projected to slip into extreme poverty this year because of COVID-19, per capita income growth is expected to average only 0.4 percent a year in 2021–22, reversing only a small part of the last year's loss. There are, moreover,

Table 1.1: Global and regional economic growth
(percent)

	2018	2019	2020e	2021f	2022f	2023f
World	3.2	2.5	-3.5	5.6	4.3	3.1
Advanced economies	2.3	1.6	-4.7	5.4	4.0	2.2
Emerging market and developing economies	4.6	3.8	-1.7	6.0	4.7	4.4
Sub-Saharan Africa	2.7	2.5	-2.4	2.8	3.3	3.8

Source: World Bank Global Economic Prospects (June 2021)

[1] World Health Organization. WHO Coronavirus (COVID-19) Dashboard. Available from https://www.who.int/data (accessed on June 20, 2021).

[2] pandem-ic. 2021. Vaccination by region. Available from: https://pandem-ic.com/vaccination-by-region/ (accessed on June 20, 2021

[3] All GDP statistics in this section are drawn from World Bank, Global Economic Prospects, June 2021, unless otherwise indicated.

[4] World Bank Group. 2021. Commodity Markets Outlook: Causes and Consequences of Metal Price Shocks, April 2021. World Bank, Washington, DC & World Bank Group. 2021. Commodity Markets – Monthly prices (May 2021).

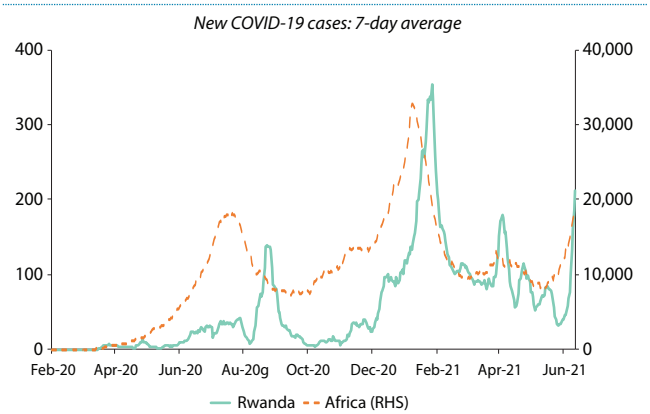
significant downside risks to the SSA outlook, such as lingering procurement and logistical impediments to vaccinations, further increases in food prices that could worsen food insecurity, rising internal tensions and conflicts, and deeper-than-expected long-term damage from the pandemic that could further dim prospects for output growth.

1.2. Rwanda—Taking Stock of Recent Developments

Rwanda's battle with COVID-19 continues. The pandemic unfolded in March 2020, and officially recorded cases rose to the first peak in August 2020 (Figure 1.1). Rwanda experienced a second wave of COVID-19 infections in December 2020–January 2021; about 20 percent of fatalities were recorded in that period. COVID-19 cases began to rise again in June, with new cases numbering in the triple digits for eight consecutive days, totaling about 1,500 cases in seven days from June 09 to 15, hinting to a potential third wave of COVID-19. As of June 15, about 29,000 total infections have been reported, about 2,232 cases per million people, well below the African average caseload of 3,878 per million people.

The vaccination campaign is gaining pace but is below the government target. Kicked off in early March, the government targeted high-risk population, including health workers and market traders. The COVID-19 vaccination campaign also targeted people with disabilities, those with chronic health conditions and people aged 65 and above. The government set the target of vaccinating 30 percent of the population by the end of 2021 and 60 percent by the end of 2022. By June 15, 389,719 persons (representing less than 3 percent of the population) had received at least one dose.[5] Despite an early start, vaccine shortages and logistical challenges pose threats to the program which are exacerbated by the spread of more transmissible variants around the world.

Figure 1.1: Confirmed COVID-19 cases in Rwanda and Africa



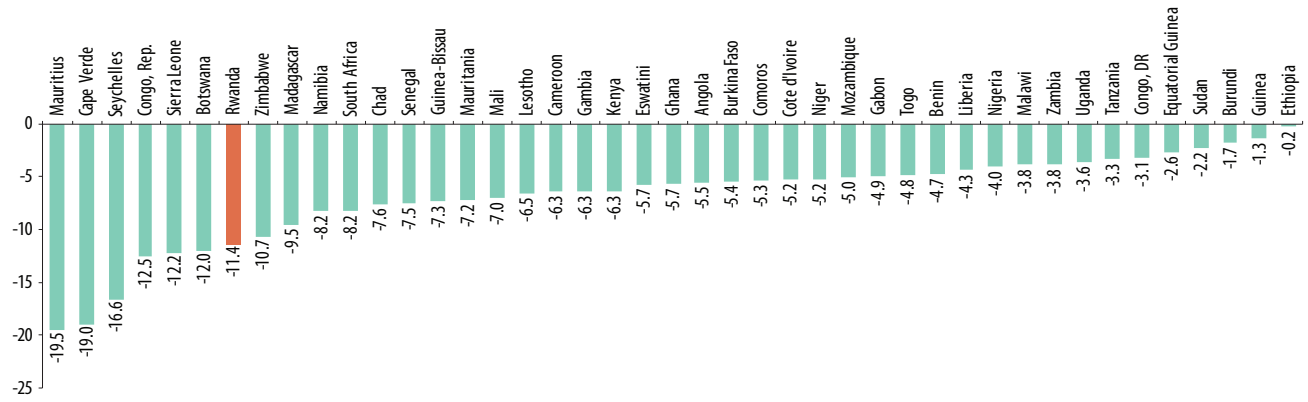
Source: Our World in Data (June 16, 2021)
https://ourworldindata.org/coronavirus-source-data

Real sector developments

The COVID-19 pandemic led Rwanda's economy into recession since 1994. Rwanda's real GDP was growing at an annual pace of about 8 percent in two decades prior to the pandemic. The COVID-19 pandemic disrupted Rwanda's domestic economic activity while depressing external demand for its key exports. Global mobility restrictions led to a fall in both the export and import of services, while overall goods exports and imports increased modestly. Social-distancing measures implemented to limit the spread of the pandemic and ease pressures on health systems brought activity close to a halt in many sectors. The resulting increase in unemployment depressed private consumption—via earning losses—especially for households with workers in casual employment. This led to sharp GDP contraction in the second quarter of 2020, i.e. -12.4 percent, over to decades. Overall, real GDP fell by 3.4 percent in 2020, the first recession since 1994. This makes more than 11 percentage points difference between the pre-COVID and recent forecast for GDP growth in 2020 and is the seventh largest in sub-Saharan Africa (Figure 1.2). With population growing by 2.3 percent a year, per capita GDP fell by about 5.5 percent in 2020.

[5] The vaccination campaigned kicked off on March 5, 2021, with 392,960 vaccine doses, including 240,000 doses of AstraZeneca and 102,960 doses of Pfizer received on March 3 from COVAX, plus 50,000 doses of AstraZeneca received on March 5 from India. In late May 2021, Rwanda has received an additional 247,000 doses of AstraZeneca and 100,000 doses of Pfizer Covid-19 vaccine through the COVAX mechanism.

Figure 1.2: The growth impact of the pandemic ranks among the most severe in SSA
(percentage point difference between pre-COVID and latest estimate of 2020 GDP growth)

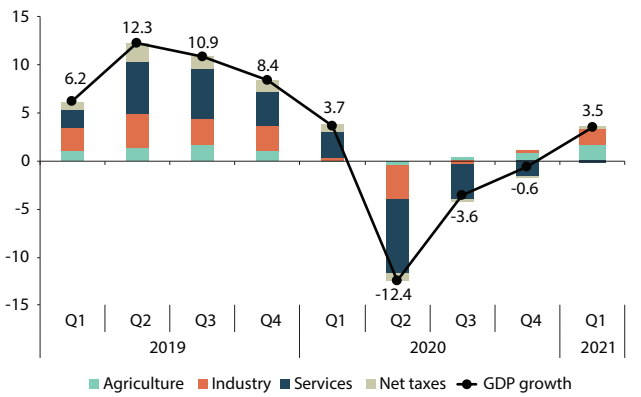


Source: Global Economic Prospects (GEP), June 2021

With the government's quick response, economic recovery is underway. Following the outbreak of COVID-19, the government of Rwanda moved quickly to mitigate the impact on households and firms. Policy measures included easing monetary policy and financial regulation measures to support the banking sector, as well as fiscal measures including more health and social protection spending. According to official quarterly estimates, GDP rose by 3.5 percent year-on year in the first quarter of 2021 (Figure 1.3). Growth in the services sector remained in negative territory, constituting a drag on GDP growth for the fourth consecutive quarter, while agriculture and industry contributed positively to growth.

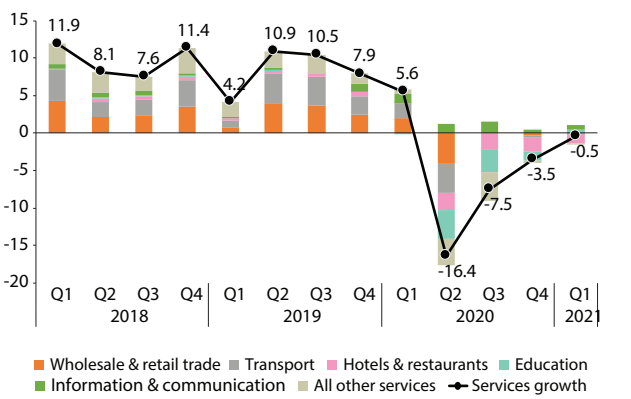
In 2020, COVID-19's mobility restrictions and personal avoidance behavior pushed the services sector to its deepest declines in more than 20 years, partially offset by the strong rebound in information and communication services. During the lockdowns, firms and households adopted to the use of online solutions to ensure some continuity of business and daily life, which led to stellar growth in information and communication. On the other hand, key services sectors contracted, such as transport, retail and wholesale trade, maintenance and repair as well as hotel and restaurants. The wholesale and retail trade sector started feeling the pinch of the pandemic already in February 2020, as traders were unable to replenish inventories given tighter border controls. These services sectors were mostly affected from late March 2020 onwards by the country-wide lockdown, including closure of non-essential retail services and mobility restrictions that only spared essential services like markets, supermarkets and

Figure 1.3: Rwanda's GDP contracted, but showed signs of improvements amid easing of restrictions
(percent)



Source: National Institute of Statistics of Rwanda (NISR)

Figure 1.4: The pandemic battered the services sector
(annual percentage change)



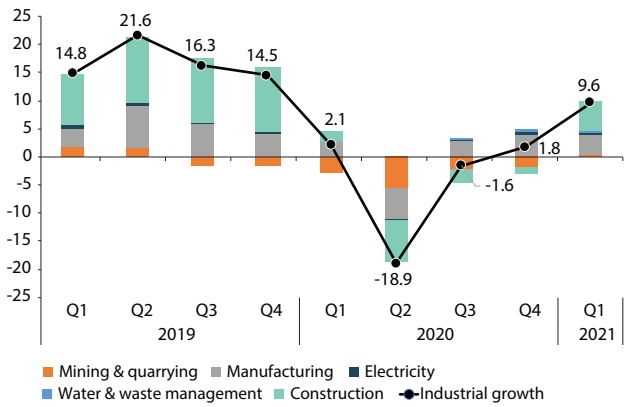
Source: NISR

pharmacies. These services accounted for about 55 percent of growth in 2018–2019. The other most hit sector was education as schools were closed for about eight months and reopened gradually since November 2020. In 2020, the services sector contracted by 5.5 percent, compared to an 8.2 percent-average growth in the previous five years. Therefore the services sector has been the main drag on growth in 2020, for the first time in two decades. Services sector output continued to fall in the first quarter of 2021, as the economy experienced a second wave of COVID-19 infections.

The industrial growth returned to positive zones since the fourth quarter of 2020 after its deepest contraction in two decades in the second quarter. During the second half of 2020, a broad-based decline was observed across all major industrial components, except for water and waste management whose output remained constant. The contraction was more severe in mining and quarrying, which production had more halved, year-on-year, in the second quarter. Mining and industry continued to contract for the rest of 2020, but to a relatively lesser extent. The contraction of manufacturing and construction was also severe in the second half, with declines of 12.2 percent and 20.3 percent respectively. Construction also contracted, while manufacturing saw its growth recovering in the third and fourth quarters (Figure 1.5). The faster recovery in manufacturing, alongside persistent weakness in the services sector, points to the shifts of consumption patterns towards goods and away from services. This pattern could also be observed in the food manufacturing segment, whose growth remained positive throughout 2020. In the first quarter of 2021, industrial growth reached 9.6 percent, as construction and mining value added increased by 14.1 and 3.3 percent, respectively.

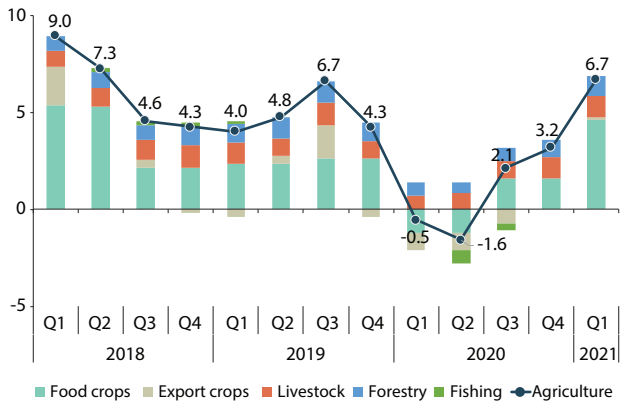
Growth in agriculture partially offset declines in industry and services. Boosted by robust food production of Seasons B and C, the agricultural sector reported a positive growth in the second half after bad performance in the first half as heavy rains and floods destroyed part of the production of some important food crops in Season A (Figure 1.6). Harvests then improved, and food production increased by 2.6 percent in both third and fourth quarters, which has led to improvements in food prices over the second half of 2020. Output of export crops experienced declines in the first three quarters of 2020 and saw some recovery in the fourth quarter as the production of both tea and coffee recorded good performance. This has also helped the overall growth in agriculture to improve in the fourth quarter. Good performance of export crops continued in the first quarter of 2021, and together with robust food production led the overall growth in agriculture to 6.7 percent.

Figure 1.5: Rwanda's industrial sector also suffered shocks
(annual percentage change)



Source: NISR

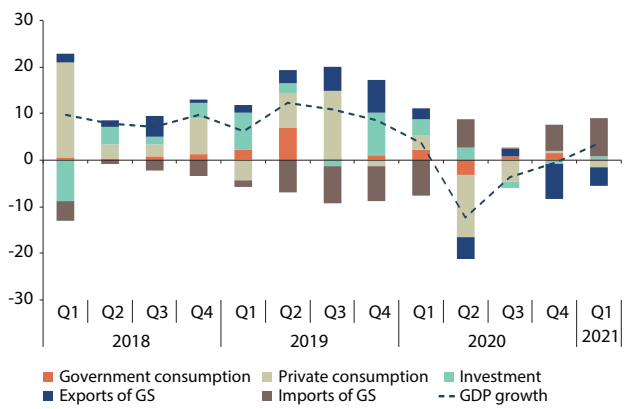
Figure 1.6: Growth in agriculture recovered in the second half
(percent change)



Source: NISR

The pandemic severely depressed demand in 2020 and in the first quarter of 2021 (Figure 1.7). Private consumption—the largest driver of domestic demand in Rwanda, accounting for about 70 percent of output growth in 2018–2019—is estimated to have contracted by 5.0 percent in 2020 and 2.1 percent in the first quarter of 2021. Income losses by firms and workers, the latter in part driven by rising unemployment (see next section), reduced household spending on consumption. Growth in government consumption was subdued, as higher spending on health and social protection was partially offset by reductions in other goods and services (e.g., office supplies, water, energy, repairs and maintenance and travel) owing to the closure of schools and borders, coupled with many civil servants working from home. Investment shrank in 2020, with sharp declines in investment in construction, despite increased government capital expenditure. The collapse of services trade in 2020 reduced total exports by 5.9 percent (services exports fell by half) and total imports by 3.4 percent. Since imports are considerably larger than exports, the negative contribution of net exports was less than in 2019.

Figure 1.7: Rwanda's GDP growth, expenditure sides
(percentage points contribution to real GDP growth, year-on-year)



Source: NISR

Labor market developments

Both employment and unemployment rose in 2020. Over 350,000 people entered the labor market in 2020, in large part because young workers took jobs during school closings.[6] As a result, employment rose by nearly 200,000 workers (Figure 1.8), and employment to population ratios increased (Figure 1.9a). Most of the rise in employment was in rural areas, as a large portion of employment gains occurred in agriculture, and two thirds of the increase in construction employment was in rural areas as well. All other sectors, except human health and social work activities and a few smaller sectors, experienced a fall in employment.[7] However, the inability of the labor force to absorb all of the new entrants, coupled with job losses from the pandemic, resulted in widespread increases in unemployment rates (Figure 1.9b). Male and female workers, urban and rural workers, and all workers regardless of their educational attainment, experienced rising unemployment rates.

The pandemic resulted in considerable volatility in labor market outcomes over the course of the year. Employment to population ratios plunged

Figure 1.8: Employment changes by selected sector: Rwanda 2019–2020
(in thousands)

Source: Rwanda Labor Force Survey, various issues

[6] The Labor Force Survey Annual Report 2020 (NISR, 2020) indicates that the nearly 4 percentage point increase in the labor force participation rate of the youth was due to the school closure between the second and third quarters (p. 3).

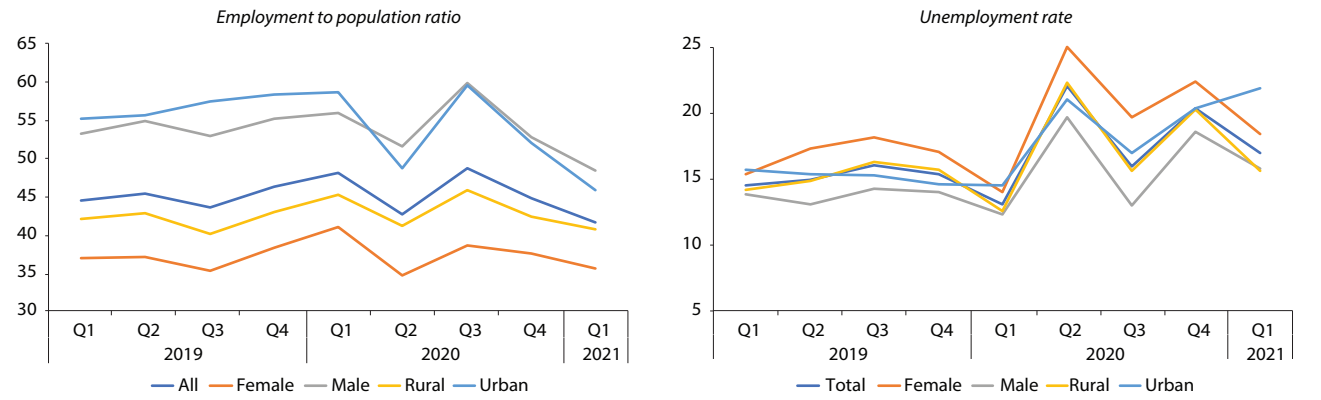
[7] Particularly large decreases in employment were seen in transport and storage (-24,000), "activities of households as employers" (-41,000) and "activities of extraterritorial organizations and bodies" (-13,000).

in the second quarter of 2020 and unemployment rates soared across demographic groups, on average by about 9 percentage points (Figure 1.9). The labor market recovered in the third quarter but contracted again in the fourth quarter, though unemployment rates remained slightly below their second quarter peak. This is in stark contrast to the largely stable quarterly indicators of 2019.[8] Across demographic groups, labor market outcomes reflected this quarterly volatility, though some groups experienced steeper changes than others.

Female workers were particularly hit hard in this volatile period. Compared to their male counterparts, they lost more during the downturn and gained less during the recovery period. As unemployment rates rose sharply during the second quarter, the female unemployment rate increased by 11 percentage points, nearly 4 percentage points more than the male unemployment rate (Figure 1.9). And as the Rwanda labor market recovered in the third quarter, female labor market indicators lagged behind those of male workers. On an annual basis, notwithstanding the fourth quarter recovery, the female unemployment rate—already several points higher than the male rate, pre-pandemic—increased in 2020 by over 1 percentage point more than that of the male. These differences in the impact of the pandemic reflect, in part, gender differences in the structure of employment. For example, male workers benefited more from the net increase in aggregate employment in 2020, as the majority of construction workers are male, though men and women benefited more or less equally from the increase in agriculture employment.

Labor market conditions deteriorated further in the first quarter of 2021. Between Q4 2020 and Q1 2021, employment fell everywhere except in agriculture. On average, employment was about 10 percent below where it was just before the lockdown. Sectors that experienced employment increases throughout most of 2020, such as construction and wholesale and retail trade, are now down. The overall unemployment rate fell by 3 percentage points from Q4 2020 to Q1 2021, reflecting the 5-percentage point fall in the participation rate as discouraged workers left the labor force (and perhaps students returned to schools). Unemployment rates remained 4.4 percentage points higher for women and 3.4 points higher for men compared to Q1 2020, just before the lockdown.

Figure 1.9: Quarterly labor market indicators: Rwanda 2019–2021
(percent)



Source: Rwanda Labor Force Survey, various issues.

[8] Some caution is warranted in comparing quarterly indicators due to a methodological revision. Owing to the lockdown and constrained movement during the pandemic, phone interviews and an abridged questionnaire were used in the second and fourth quarters of the Labor Force Survey (NISR, 2020). Nonetheless, the non-response rate remained steady, at just 3 percent throughout. The quarterly labor force indicators also track well the quarterly macroeconomic indicators.

Inflation developments

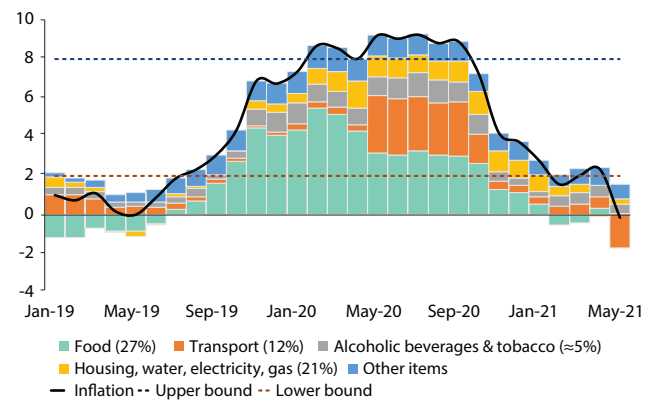
Inflation fell in early 2021 to its lowest level since mid-2019, reflecting a rapid decline in food and transport prices (Figure 1.10). Inflation decreased from the recent peak of 9.2 percent in July 2020 to 2.4 percent in April 2021, before becoming negative in May (-0.1 percent). This was largely due to improved harvests in agricultural seasons B and C, which shifted food prices (27 percent of the consumer price index (CPI) basket) from 19.9 percent growth in February 2020 to declines in February and March 2021. In addition, the 45 percent increase in the price of a bus ticket when the lockdown was eased (the number of bus passengers was limited to only 50 percent of the normal capacity) contributed to the rise in inflation from May to October, and to the decline with the downward revision in ticket prices once buses were allowed to carry passengers to their full capacity and the transport sector started accessing the ERF. Similarly, core inflation, which excludes fresh products and energy items, rose to 8.1 percent y-o-y in May 2020, a level not seen since December 2011, and then declined with the fall in bus fares. By April 2021 core inflation stood at 3.3 percent, before becoming zero in May.

Monetary and financial sector developments

The National Bank of Rwanda (NBR) maintained accommodative policy stance to support the economic recovery. With the economic activity remaining subdued in the first four months of 2020, the NBR maintained its central bank rate (CBR) at 4.5 percent, for over 13 consecutive months, in their Monetary Policy Committee meeting held on May 12, 2021. This was to continue supporting to the banking sector in effort to finance the economic recovery. The decision was on the back of modest economic recovery and muted demand as well as relatively moderate inflation. Prior reductions in reserve requirements have been maintained (see REU-16th edition for details on the several measures to support economic activity while cushioning the financial sector from the pandemic in 2020). It is important to note that various liquidity measures taken in 2020 have been effective in supporting the financial soundness of the banking sector (Figure 1.11), though the latter has been cautious in extending new loans.

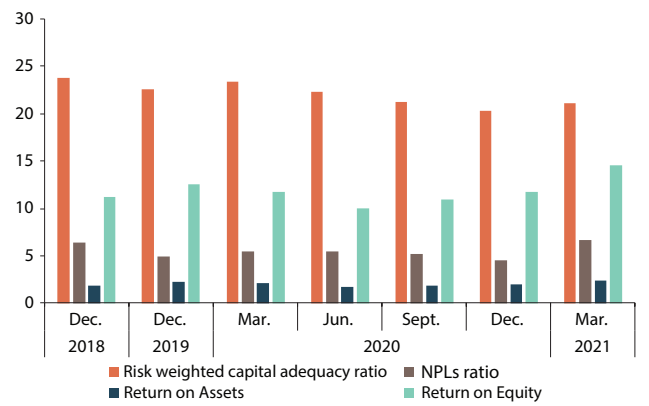
The banking sector has broadly withstood the impact of COVID-19, but it faces significant downside risks due to uncertainty around the pace of recovery. The banking sector's overall capital adequacy ratio remained stable at around 21 percent since December 2019, well above NBR's regulatory threshold of 12.5 percent. The liquidity of the banking sector also remains sufficient to absorb funding shocks, with a liquidity coverage ratio of above 100 percent. Gross non-performing loans (NPLs), however, have increased to 6.6 percent

Figure 1.10: Headline inflation drivers, 2019–20
(percentage points)



Source: NISR
Note: Numbers in parentheses are categories' weights in the consumer basket.

Figure 1.11: Rwanda's banking system remains sound
(percent)



Source: National Bank of Rwanda (NBR)

in March 2021 from 4.9 percent in December 2019 (Figure 1.11), with loan loss provisioning declining to 79.9 percent in March 2021 from a peak of 106.3 percent in December 2020. The increase in NPLs is attributable to the economic contraction due to the pandemic and remains high or above the average in sectors like mining (70.7 percent) and trade (8.1 percent). Banking sector performance has been supported by the NBR's emergency measures, including loan restructuring, which saw a total of about 31.7 percent of the total credit outstanding being restructured by end-December 2020.

External sector developments

The pandemic-induced export contraction led to deteriorations in trade and current account deficits in 2020 (Table 1.2). The fall in imports was less than the fall in exports, and the trade deficit widened to 16.4 percent of GDP in 2020, 2.3 percentage points higher than in 2019. Export growth was subdued in 2020, despite the 130 percent increase in gold exports following the establishment in Rwanda of Aldango Ltd, an Emirati gold refinery company. Receipts from most other exports declined substantially, however. International travel restrictions and internal lockdowns sharply reduced tourist arrivals and dampened prospects for the newly established meetings, incentives, conferences/conventions and events/exhibitions (MICE) tourist offerings (Box 1.1). Lower global demand for metals in the beginning of 2020 reduced Rwanda's exports of tin ore, coltan and tungsten, although these began to recover later in the year and receipts in January–April 2021 are 40 percent higher than the same period of 2020. The closure of Rwanda's border also contributed to reduced export revenue, with re-exports and

Table 1.2: Balance of payments
(percent of GDP)

	2017	2018	2019	2020
Current account	**-9.5**	**-10.1**	**-11.9**	**-12.2**
Goods and services	***-12.6***	***-13.5***	***-14.3***	***-16.4***
Exports	20.6	21.2	21.8	18.6
Goods	11.2	11.7	12.0	13.6
Services	9.3	9.5	9.8	5.0
Import	33.2	34.7	36.1	35.0
Goods	21.8	23.7	26.1	30.0
Services	11.4	11.0	10.0	5.0
Primary income	***-3.1***	***-3.6***	***-3.2***	***-1.8***
Secondary income	***6.3***	***6.9***	***5.6***	***6.0***
o/w General government, net	3.9	3.7	2.6	2.8
Remittances, net	1.6	2.1	2.0	2.3
Capital account balance	**2.1**	**2.5**	**2.5**	**3.0**
Financial account balance	**7.4**	**8.4**	**8.9**	**10.5**
Direct investment	2.8	3.6	2.5	1.0
Portfolio investment	-0.8	-0.2	-0.3	0.3
Loans and flows	5.4	5.0	6.7	9.3
o/w General government, net	4.1	4.9	6.1	9.0
Net errors and omissions	**1.7**	**0.2**	**1.5**	**1.9**
Overall balance	**1.7**	**1.0**	**1.1**	**3.2**

Source: NBR

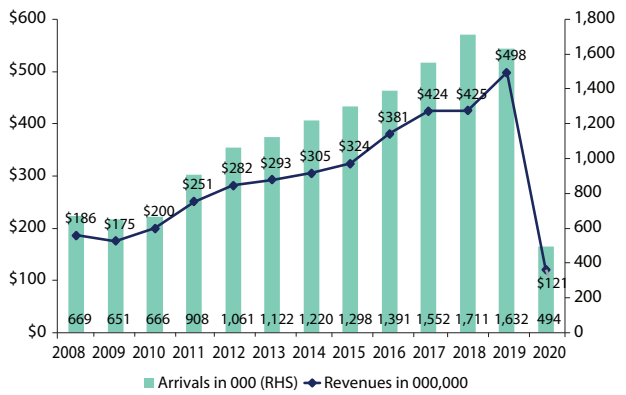
informal cross border particularly affected. Similarly, the surge in imports of gold for processing drove up Rwanda's import bill by 10.8 percent, y-o-y in 2020, despite the decline in investment and disruptions in global value chains. Other import categories reported a mixed picture, although the border closure reduced informal cross-border trade imports by 79.2 percent. The current account deficit (CAD) stood at 12.1 percent of GDP in 2020, as the primary income deficit fell by 1.4 percentage points of GDP, and public transfers increased by 7.8 percent (after falling for two consecutive years) as development partners increased support to combat COVID-19. Similar to other countries in the region, remittances to Rwanda have been resilient, however, and increased by 8.8 percent in 2020.

Box 1.1: The pandemic had dampened Rwanda's MICE sectors

Tourism has been a significant export earning for Rwanda. Exports of tourism services had been growing significantly in the 10 years prior to the pandemic. Between 2010 and 2019, the number of tourists increased by 12.5 percent yearly up to 2018; in 2018, Rwanda became the seventh most visited country in Sub-Saharan Africa, attracting more than 1.5 million visitors for the first time. The main characteristics of international tourists to Rwanda are the large share of visitors for business and conferences (33.9 percent in 2010–19), the small share of tourists for leisure (9.0 percent), and the small share of tourists from developed countries (12.7 percent). Tourism has been the single-largest source of foreign-exchange earnings, generating about 22 percent of exports of goods and services in 2017-19.

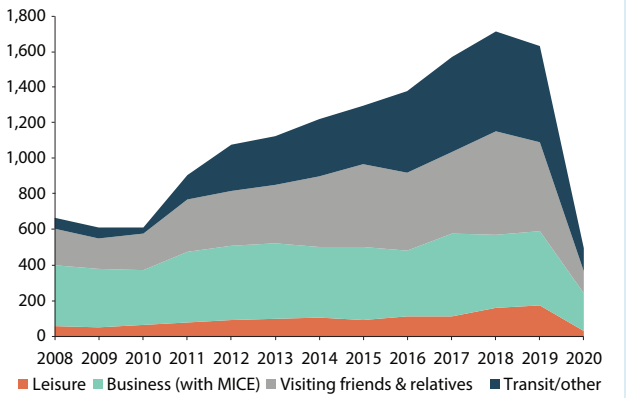
Rwanda's tourism has been severely affected by COVID-19 and this had multiplier effects on the economy. With international travel restrictions and internal lockdowns, tourism arrivals dropped by 76 percent to about 494,000 in 2020, the first contraction since the 2008–09 global financial crisis. This reduced travel revenues by 73.6 percent and receipts from transport exports by 49.8 percent. Domestically, tourist operators, hotels and restaurants have seen their activities reduced. Indeed, the output of hotels and restaurants contracted by 40.6 percent in 2020, being the hardest-hit sector of the economy. The loss of income of the people working in these sectors reduced domestic demand and disproportionally affected informal workers in the sector.

Figure B1.1: The number of tourists sharply declined in 2020 …



Source: RDB and BNR

Figure B1.1: The number of tourists sharply declined in 2020 …
(thousands)



Source: RDB and BNR

The recovery of the tourism sector is likely to be slow. Due to the evolving nature of the pandemic, many countries are now reintroducing stricter travel restrictions. These include mandatory testing, quarantines and in some cases a complete closure of borders, all weighing on the resumption of international travel. At the same time, the gradual rollout of a COVID-19 vaccine is expected to help restore consumer confidence, contribute to the easing travel restrictions and slowly normalize travel in 2022.

Official inflows were sufficient to finance the current account deficit and increase reserves. Increases in capital inflows and government borrowing, related to a surge in COVID-19-related assistance, offset the drop in direct investment. Given the low level of economic activity, a portion of these funds ended up increasing reserves, which reached US$1,780 million in December 2020, equivalent to about 6 months of import cover. The comfortable level of reserves, together with the low demand for imports, has helped the nominal exchange rate to remain relatively stable. The franc depreciated by 5.4 percent, y-o-y, in nominal terms against the US dollar in 2020, slightly higher than the 4.9 percent depreciation in 2019.

Fiscal sector developments

The pandemic hit Rwanda during a period of expansionary fiscal policy, exacerbating already mounting fiscal vulnerabilities. Rwanda's fiscal policy has been expansionary since FY2017/18, supporting the implementation of the National Strategy for Transformation. In responding to the challenges posed by the pandemic, the government responded rapidly and effectively, putting in place the Economic Recovery Plan (ERP) for the period May 2020 to December 2021 to support households and firms. Spending growth remained high in FY2019/20 and the first half of FY2020/21, as the government tried to deliver on health and social safety sectors to contain the pandemic, provided support to Rwandair following the loss of revenues from transport of passengers, and maintained capital spending. At the same time, total revenues and grants only increased by 7.6 percent y-o-y, lower than in FY2018/19. As a result, the fiscal deficit, on accrual basis, widened to an estimated 9.1 percent of GDP in FY2019/20 and 10.2 percent of GDP in the first half of FY2020/21, from 6.3 percent of GDP in FY2018/19 (Table 1.3). Foreign borrowing, much of it concessional financing from development partners, amounted to 8.7 percent of GDP in the first half of FY2020/21, higher than the level of fiscal deficit. As a result, net domestic financing was a negative 1.7 percent of GDP (Table 1.3). These dynamics in deficit financing are expected to have led to at least a 6 percent of GDP increase in public debt.

The fiscal deficit is estimated to have increased in FY2020/21, as government sustained its investment drive amidst revenue shortfalls. Tax revenues continued to underperform during the first half of FY 2020/21, with falling to 15.2 percent from 15.8 percent of GDP in the same period of the previous fiscal year. The most affected tax category was the taxes on goods and services, reflecting the decline in private consumption as well as low government spending on goods and services.

Meanwhile, government expenditures increased sharply in the first half of FY2020/21, mainly due to large capital spending (Table 1.3). Total spending is estimated to have jumped 2.7 percentage points of GDP in the first half of FY2020/21 compared to the first half of FY2019/20, to 34.0 percent of GDP. Capital spending, the main driver of expenditure increases, reached 14.9 percent of GDP, the highest level in five fiscal years. Net lending equaled 4.0 percent of GDP in the same period, 0.4 percentage points higher than in the previous fiscal year, mainly due to utilization of the Economic Recovery Fund (ERF) to assist private businesses. On the other hand, current spending declined to 15.1 percent of GDP from 15.5 percent of GDP in the previous fiscal year, mainly reflecting lower government spending on goods and services as a result of restrictions on working and movement.

Table 1.3: Rwanda's public finances, 2018/19 to 2020/21
(percent of GDP)

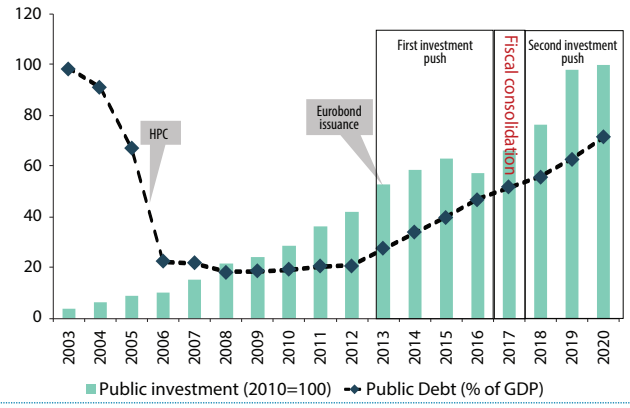
	FY2015/16	FY2016/17	FY2017/18	FY2018/19	FY2019/20	First half of FY2020/21
Revenue and grants	**23.5**	**22.3**	**22.7**	**23.7**	**23.3**	**23.8**
Total revenue	***17.8***	***17.8***	***18.2***	***19.2***	***18.8***	***18.8***
Tax revenue	15.3	15.3	15.6	16.3	16.2	15.2
Direct taxes	6.2	6.5	6.7	7.1	7.3	6.4
Taxes on goods & services	7.8	7.5	7.7	7.9	7.7	7.6
Taxes on international trade	1.3	1.3	1.2	1.3	1.3	1.3
Non-tax revenue	2.5	2.5	2.6	2.9	2.6	3.6
Total Grants	**5.7**	**4.6**	**4.5**	**4.5**	**4.5**	**5.0**
Budgetary grants	3.1	2.5	2.4	1.9	1.8	2.3
Capital grants	2.6	2.0	2.1	2.7	2.8	2.7
Total expenditure & net lending	**26.5**	**26.8**	**27.3**	**30.0**	**32.4**	**34.0**
Current expenditure	***14.1***	***14.8***	***14.7***	***15.4***	***16.0***	***15.1***
Wages and salaries	3.7	4.1	4.0	4.2	4.3	4.2
Purchases of goods & services	2.8	2.7	2.7	2.6	2.7	2.6
Interest payments	0.9	1.0	1.1	1.2	1.5	1.6
Transfers	4.7	4.8	4.5	4.7	5.1	4.5
Exceptional social expenditure	2.1	2.2	2.3	2.7	2.4	2.1
Capital expenditure	***11.0***	***10.5***	***10.6***	***12.3***	***12.7***	***14.9***
Domestic	6.8	5.8	5.8	7.2	6.9	7.4
Foreign	4.2	4.7	4.8	5.1	5.8	7.5
Net lending	***1.3***	***1.6***	***2.0***	***2.2***	***3.7***	***4.0***
Overall deficit (accrual basis)	-3.0	-4.5	-4.6	-6.3	-9.1	-10.2
Primary deficit	-2.1	-3.5	-3.4	-5.1	-7.6	-8.5
Change in arrears (net reduction-)	-0.4	-0.3	-0.3	0.6	-0.3	3.1
Overall deficit (cash basis)	**-3.4**	**-4.8**	**-4.9**	**-5.6**	**-9.4**	**-7.1**
Financing	**3.4**	**4.8**	**4.9**	**5.6**	**9.4**	**7.1**
Foreign financing (net)	3.5	4.5	4.4	5.1	10.1	8.7
Domestic financing	0.0	0.3	0.5	0.5	-0.8	-1.7

Source: MINECOFIN & NISR
Note: The fiscal year runs from July through June. Data are presented in FSM1986.

The crisis has heightened challenges to debt sustainability

Rwanda's high level of debt will present a difficult challenge to achieving the investments necessary for development. Rwanda's stellar growth performance of recent years was fueled by rapid public debt accumulation to finance large public investment (Figure 1.12). Rwanda's public debt rose to 62.9 percent of GDP in 2019 from about 15 percent in 2006 (following debt reduction under the HIPC Initiatives and MDRI), a faster rate of increase than in regional peers. An exceptionally aggressive public investment policy was a major reason for rising debt: a persistent primary deficit accounted for roughly 4 percentage points of the total average rise in Rwanda's public debt of 5 percent points of GDP per year from 2015 to 2019. While Rwanda's debt averaged around 20 percent of GDP from 2006 to 2012, it jumped to average 30 percent between 2013 and 2016 to finance the so called "first investment push" when the government decided to issue its first Eurobond. Public investment then accelerated between 2017 and 2020 to complete major projects in the MICE sector and build transformational

Figure 1.12: Increase in the public debt to GDP ratio, 2003–2020



Source: MINECOFIN

infrastructures. As a result, the contribution of public investments to the growth of public debt in Rwanda is the highest of any African country.

The COVID-19 crisis has substantially increased financing needs and projected public debt levels. Fueled by a large primary deficit reflecting COVID-related expenditure and revenue shortfalls, public gross financing needs are expected to have reached roughly 15 percent of GDP in 2020, nearly double the average financing needs between 2015 and 2019. Public and publicly guaranteed debt is estimated to have reached nearly 71.3 percent of GDP in 2020, or about 10 percentage points higher than pre-crisis projections and is projected to peak at 84 percent in 2023, compared to the pre-COVID projected peak of 57 percent of GDP in 2021 and to a median debt increase of 7 percent in low-income countries.[9] Public debt is now forecast to reach 79.4 percent of GDP in 2021 and 81.6 percent in 2022.

In contrast to peer countries, Rwanda prudently relied on multilateral concessional financing, including to finance COVID-related expenditure. Concessional borrowing is estimated to have accounted for more than 85 percent of total public external debt in 2020. Multilateral creditors accounted for about 74.6 percent of total external PPG debt by June 2020, with most of the rest represented by the 2013 Eurobond issuance.[10] Concerns about possible indirect impacts on their sovereign credit ratings and access to international markets and lower exposure to Chinese creditors (around 5 percent of external public debt) and other bilateral creditors than among other SSA countries are reasons that likely contributed to the country's decision not to participate to the Debt Service Suspension Initiative (DSSI).[11] Beside the Eurobond, Rwanda has no exposure to other private creditors, which have gained in importance in other regional countries. The average maturity of Rwanda's debt (32 years) exceeds that of regional peers, while the average interest rate on new external debt commitments remains below the borrowing cost of other SSA low-income countries (LICs).

Against the background of rapidly rising public debt and the effects of the COVID-19 pandemic, the June 2020 World Bank/IMF DSA downgraded Rwanda's risk of external debt distress from low to moderate.[12] PPG external and overall public debt are deemed sustainable. However, Rwanda now has one of the highest debt-to-GDP ratios in Africa. Rwanda's fiscal space has narrowed, as the number of tax years it would take to repay outstanding public debt rose from 1.7 in 2012 to an estimated 4.5 years in 2020 (Figure 1.13)[13]. The DSA concludes that Rwanda has limited fiscal space to absorb shocks. This highlights the call for fiscal consolidation as the crisis abates, to reduce domestic interest rates, and to implement policies that increase growth and investment, which will also help reduce the debt burden.

[9] See World Bank. Global Economic Prospects, June 2021.

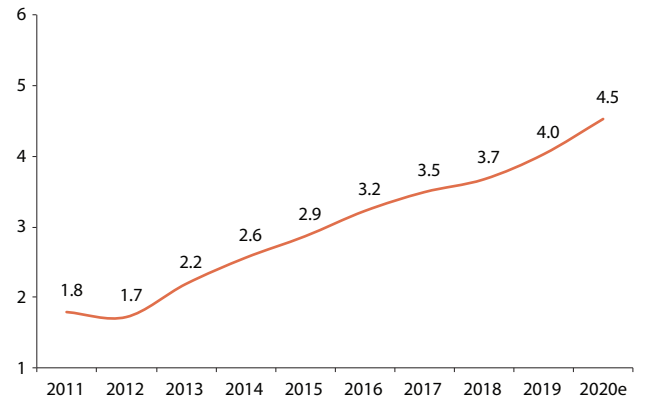
[10] Rwanda successfully issued its first Eurobond—a US$400 million, 10-year bond—in April 2013, the proceeds of which were mainly used for Rwanda's ambitious investments. Rwanda is widely expected to issue another Eurobond to retire the maturing of the loan in 2023 at an interest rate of 8 percent (IMF, 2019), almost 3 percentage points higher than the current rate.

[11] On April 15, the G20 announced the DSSI, which is a temporary official bilateral sovereign debt payment suspension. The DSSI allows eligible countries to suspend principal or interest payments only on their bilateral debts to G20 members. Countries with market access represent 33 percent of DSSI participants, with 15 of the 22 countries having outstanding Eurobonds.

[12] IDA and IMF, Rwanda Joint World Bank-IMF Debt Sustainability Analysis (December 2020) http://documents.worldbank.org/curated/en/708931610120180974/Rwanda-Joint-World-Bank-IMF-Debt-Sustainability-Analysis.

[13] 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.

Figure 1.13: Tax years needed to repay public debt, 2011–20



Source: WBG Staff estimates based on Ministry of Finance and Economic Planning, and NISR data

Despite important progress, debt transparency and fiscal risk management remain challenging because of the importance of SOEs. SOEs were established in all aspects of the economy to make up for the dearth of formal private sector entities in the aftermath of the genocide. However, SOEs constitute an important fiscal risk that materialized substantially during the COVID-19 crisis. For example, in 2020 the government provided Rwf 127.9 billion (1.3 percent of GDP) to RwandAir and covered losses incurred by the Rwanda Energy Group and Water and Sanitation Corporation Ltd—the two largest SOEs in the country by net assets. Government infrastructure investment guarantees, often issued to SOEs, equal Rwf414.1 billion (about 4.5 percent of GDP), 70 percent on external debt. Rwanda performs well on debt transparency compared to other lower income countries,[14] and the coverage of debt statistics is broad (including guaranteed debt as well as non-guaranteed debt of state-owned enterprises), which helps to limit the possible size of debt-related fiscal risks from government contingent liabilities.[15] Nevertheless, because of the realization of unexpected fiscal costs to cover SOE losses, there is an urgent need to foster SOE debt transparency and strengthen fiscal risk assessment and management strategies of SOEs.

1.3. The Medium-Term Outlook, Risks and Challenges

Significant uncertainty remains on the evolution of the COVID-19 pandemic and its effects in Rwanda. Whereas the vaccination campaign targeting health workers, teachers, security personnel, the elderly (over 65 years of age), and those with co-morbidities has been underway since March 2021, its outreach is still small, with just 2.7 percent of the population as of June 5, 2021. This remains far below of the target of the National Vaccine Deployment Plan to cover 20 percent of the population by June 30, 2021 and 60 percent by June 2022. With the general population becoming more lax on observing social distancing, a resurgence could result in government reinstating stringent mobility restrictions, and thereby affect the economic recovery.

The economic recovery

Rwanda's economy is expected to recover gradually, while remaining vulnerable to shocks. With the pandemic likely to continue to constrain business activity for the rest of the year, GDP is projected to grow by 5.1 percent in 2021—almost 1 percent above the REU-16th edition projections, but well below the 10-year average of 7.4 percent growth forecast before the crisis. This change in the forecast reflects the heightened uncertainty surrounding the third wave of the coronavirus at global and regional levels—mainly fueled by new COVID-19 variants that would weigh on investment decisions and external demand. Growth is projected to remain below the pre-crisis trajectory, with a gradual recovery by 2023. Real per capita GDP is expected to remain below its 2019 level until 2022. A quick recovery in Rwanda's strategic MICE growth

[14] World Bank, Debt Transparency: Debt Reporting Heatmap (https://www.worldbank.org/en/topic/debt/brief/debt-transparency-report, accessed June 23, 2021) Public debt data is published annually on a single website (http://www.minecofin.gov.rw/index.php?id=65) with full instrument coverage and partial sectoral coverage, excluding local governments which, however, need to obtain central government approval to borrow. In mid-2020, Rwanda published its inaugural fiscal risk statement, which highlights the country's key sources of fiscal risks, but does not provide any detail on risk mitigation. Rwanda is regularly publishing a medium-term debt management strategy and an annual borrowing plan for domestic securities.

[15] IDA and IMF, Rwanda Joint World Bank-IMF Debt Sustainability Analysis (December 2020).

Table 1.4: Rwanda—Selected indicators 2019-2023f

	2019	2020	2021f	2022f	2023f
Real GDP growth (percent)	9.5	-3.4	5.1	7.0	8.1
Inflation (CPI, percent period average)	2.4	7.7	2.4	4.9	5.8
Current account balance (% of GDP)	-11.9	-12.2	-13.4	-12.2	-11.2
Overall fiscal balance (% of GDP)	-8.0	-10.3	-8.9	-7.5	-6.3
Total public debt incl. guarantees (% of GDP)	62.9	71.3	79.1	81.3	81.1
o/w: external public debt	50.4	55.3	62.9	66.6	68.1
Gross domestic debt	12.4	16.0	16.2	14.7	13.0

Source: WBG Staff estimates

sector is unlikely due to a slow pace of vaccination in Rwanda, as well as a fear factor that will probably depress global tourism after other sectors have recovered. Further, there is considerable potential for a lasting impact on capital accumulation and productivity, as observed in similar crises in the past. In addition, the elevated unemployment rate and other weaknesses in the labor market will likely continue to weigh on private consumption.

The recovery in the services sector is projected to be sluggish, therefore undermining the potential rebound in industry and agriculture sectors. However, according to the UN World Tourism Organization, tourism and transport services remain depressed, and tourism is expected to remain constrained for some time, owing to lingering travel restrictions and reluctance to travel so long as the virus is not completely under control[16]. This would continue to affect Rwanda's key services sub-sectors of travel, accommodation, and food services, limiting recovery of the overall service sector. Moreover, delays in vaccine availability will continue to necessitate social distancing policies and perpetuate risks of a new wave of cases, thereby weighing on growth in the services sector in 2021. Agriculture is projected to grow at an average of 5 percent in 2021, supported by favourable weather conditions, robust growth in livestock, and an eventual recovery in export crops. The industrial sector too is expected to pick up, benefiting from government support of the manufacturing and construction sectors through the Manufacture and Build to Recover Programme (MBRP). The government has added a new window MBRP to its economic recovery Fund (ERF), with the aim of fast-tracking private sector investments in manufacturing and construction, and boosting economic recovery efforts with specific incentives and key performance indicators.[17]

Inflation is expected to remain within its target band of 5±3 percent over the medium term. Whereas high international oil prices could exert some pressure on inflation, this is expected to be offset by the continued muted demand in some key services sectors, particularly hotel and restaurants. Food prices, while volatile, are expected to increase only moderately with improved weather. As imports gain momentum, exchange rate depreciation is likely to exert pressure on non-food inflation. Monetary accommodation is likely to continue.

Rwanda's current account deficit is expected to remain elevated. Whereas the price outlook of Rwanda's major crop exports, such as coffee and tea, looks positive over the next three years, this would

[16] UNWTO, World Tourism Barometer, March 2021. https://www.unwto.org/news/2020-worst-year-in-tourism-history-with-1-billion-fewer-international-arrivals

[17] Information on this new window can be found at http://osc.rdb.rw/en/

not be sufficient to offset the projected acceleration in imports.[18] Import growth is expected to be driven by imports of vaccines, imports of capital and intermediary goods to support the MBRP, and rising international oil prices. The recovery of remittances will largely depend on a recovery of employment and incomes in sending countries, which is expected with the recovery in the global economy. However, prospects for services remain uncertain, as difficult-to-foresee changes in travel habits in a post-COVID world will have a major impact on tourism inflows (these are currently forecast to remain at the same level as in 2020, i.e., 1.2 percent of GDP, in 2021). The United Nations Conference on Trade and Development (UNCTAD) predicts continued uncertainty about the COVID-19 pandemic's evolution and the global investment policy environment, and this will weigh on FDI flows in 2021.[19] Government borrowing, partly through concessional borrowing from multilaterals, and the drawdown of foreign exchange reserves are expected to finance the current account deficit. International reserves are projected to remain adequate, at 5.1 months of goods and service imports in 2021.

The government plans to maintain the fiscal expansion in FY2021/22 to support the economic recovery and save lives. The FY2021/22 budget draft projects spending to grow by 11.4 percent. The most significant increases will be in the health sector, in order to continue accommodating COVID-19 spending and the cost of the vaccination rollout program. The budget draft also includes spending needs for the ERP, including the ERF's support to private sector. The restructuring of education and health sector salaries, new recruitments and increases in the allowances of the security agencies are projected to increase total wage bill spending. In the preparation of a fiscal consolidation plan as the COVID-19 induced crisis abates, the FY2021/22 budget draft suggests cuts in foreign-financed components of capital expenditure. This is in line with government's intention to adopt an expenditure management system to control the growth of spending, as well as ongoing reforms to raise the economy's productive capacity. Revenue performance is expected to improve gradually, in line with economic activity.

Risks to the outlook remain tilted to the downside

A resurgence of COVID-19 would hurt the growth outlook. The pace of recovery in 2021 is expected to be subdued, reflecting the lingering disruptions to activity from an earlier second wave of COVID-19 and the emergence of more contagious variants of the virus. The success of the vaccine rollout in Rwanda hinges crucially on the speed of vaccine deliveries to the country. If delays in obtaining vaccines continue, Rwanda will struggle to reach herd immunity before the end of 2023, leaving the country exposed to new, more virulent strains of the disease, and raising the prospect that COVID-19 crisis will become a permanent, endemic problem in the country.

Weather and climate shocks are a key risk to economic recovery. Rwanda continues to be among the world's most vulnerable. The increasing frequency of weather and climatic shocks (e.g., drought and floods) could lower agricultural output and thereby impact many farms and households in Rwanda.

Fiscal pressures are likely to rise due to the pandemic response, but premature withdrawal of fiscal relief would stall the recovery. The ongoing roll-out of the COVID-19 response package will see further relief, recovery and rehabilitation spending in 2021. While this will cause Rwanda's public debt to rise sharply, the debt trajectory remains sustainable. Moreover, fiscal risks are mitigated by the composition of the debt stock (largely in concessional terms). At this point, the greater risk is that of weak execution, poor targeting, or an earlier-than-anticipated removal of fiscal support,

[18] World Bank Group. 2021. Commodity Markets Outlook: Causes and Consequences of Metal Price Shocks, April 2021. World Bank, Washington, DC & World Bank Group. 2021. Commodity Markets – Monthly prices (May 2021).

[19] UNCTAD, Investment Trends Monitor, Issue 38, January 2021. https://unctad.org/news/global-foreign-direct-investment-fell-42-2020-outlook-remains-weak

which would result in a slower economic recovery. Effective implementation of the fiscal stimulus and relief measures approved to date is therefore a priority. At the same time, fiscal consolidation will be needed over the medium-term, once the economic recovery takes hold, to rebuild fiscal buffers and ensure sufficient fiscal space to fund critical spending needs.

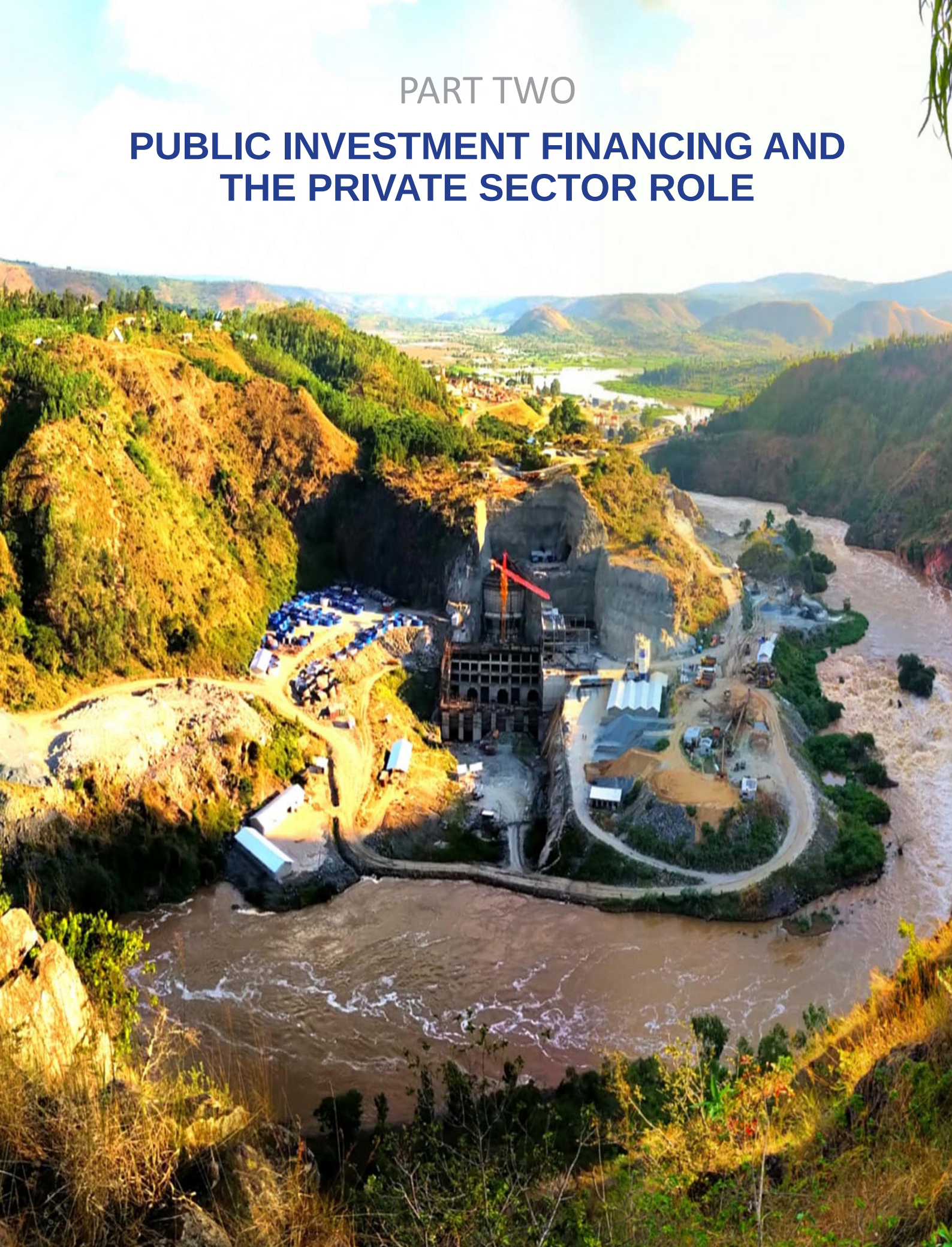
Policies to support a resilient, inclusive recovery

The COVID-19 global pandemic exposed the costs of not investing in a public health system. The near-term economic prospects for Rwanda depend on the pandemic's path. Added spending to contain the pandemic will necessarily come at the expense of other budget priorities, including vital spending on other key health areas and much-needed capital investment. The need for additional public spending on health, not only to improve preparation for and management of health crises, but also to accelerate deployment of vaccines, is key in saving lives of Rwandans. The more delayed the delivery of vaccines, the larger the unvaccinated population and thus the greater the possibility that new variants of the virus will develop, adding to the prospect of a more protracted pandemic in the country.

Protecting the poor and the most vulnerable remains key. The expansion of social programs continues to be warranted to combat the poverty impact of COVID-19 and to boost resilience to future shocks. As the vaccine rollout becomes slower than planned because of delays in vaccine deliveries, new outbreaks of COVID-19 cases across the country could result in the reinstatement of a lockdown or additional containment measures. This could not only increase the vulnerability of the already poor households, but also add on new ones. An efficient targeting system is necessary to reach those most in need during times of crisis. Extending the reach and responsiveness of social protection programs through scaling up the use of digital cash transfers is key in supporting Rwanda's vulnerable population.

PART TWO

PUBLIC INVESTMENT FINANCING AND THE PRIVATE SECTOR ROLE

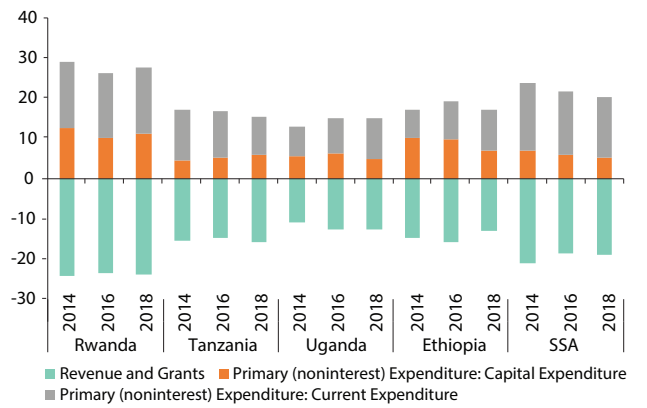


2.1. Rwanda Has Devoted Considerable Resources to Public Investment

Public investments are central to economic development, social change, and environmental sustainability. Rwanda's Vision 2050 recognizes this critical role of investment in human capital and infrastructure, and embeds them among its development priorities.[20] The share of capital expenditure in the government's noninterest expenditures in Rwanda averaged 41 percent from 2015 to 2018, compared to 26 percent on average in Sub-Saharan Africa (Figure 2.2), and the share of public sector capital expenditures in GDP from 2015 to 2018 was almost double the average share in Sub-Saharan Africa (Figure 2.2). One important goal of public infrastructure investment was to support the government's strategy to establish Rwanda as a major center for MICE.[21]

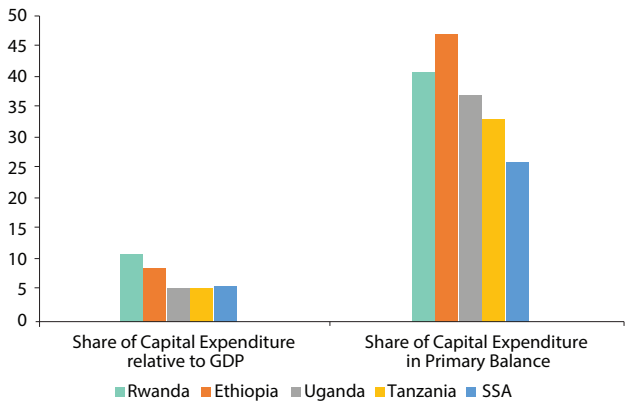
Rwanda has also been one of the top performers in total physical infrastructure financing (i.e. both private and public financing). In percent of GDP, Rwanda's cumulative total infrastructure commitments over 2014 to 2019 exceeded that of all peer countries, including countries with higher per capita incomes than Rwanda, except for Zambia, which recorded 24 percent of GDP (Figure 2.3).

Figure 2.1: Contribution of capital expenditure to public debt accumulation
(percent of GDP)



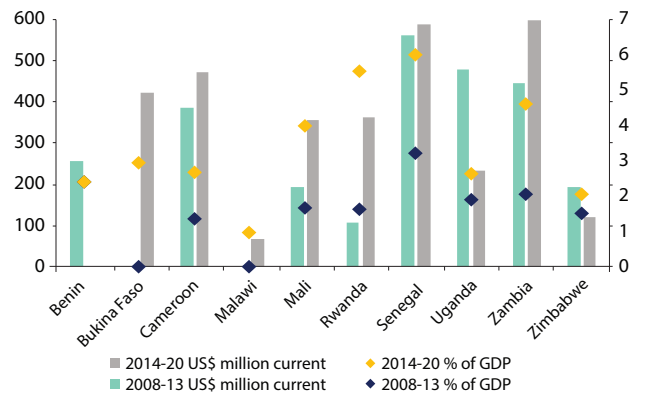
Source: WB/IMF LIC DSA database; WB MFMOD database.

Figure 2.2: Rwanda's capital expenditure relative to peer countries
(2015 – 2018, average)



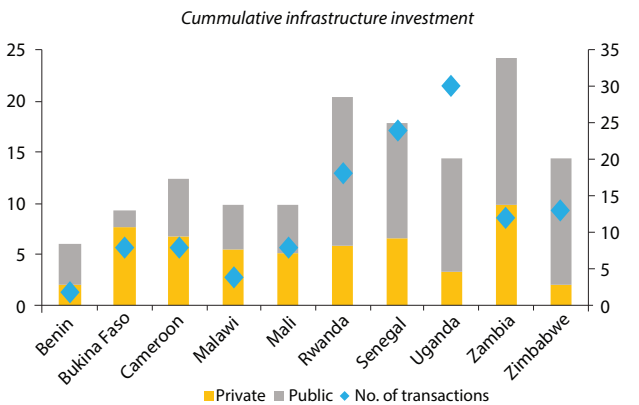
Source: WB/IMF LIC DSA database; WB MFMOD database.

Figure 2.3: More private infrastructure financing than comparators since 2014



Source: IJ Global Database and World Bank PPI Database

Figure 2.4: Infrastructure and number of projects, 2014-19
(percent of GDP)



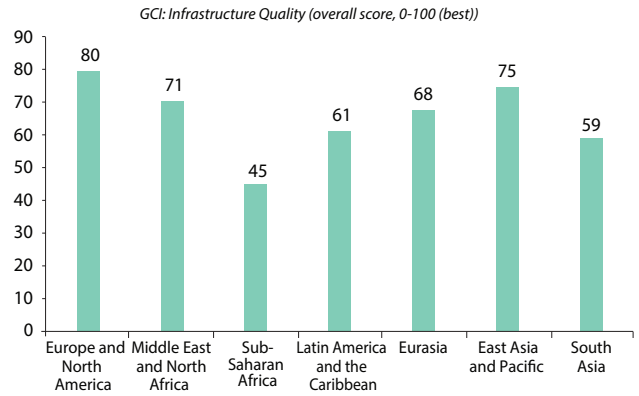
Source: IJ Global Database and World Bank PPI Database

[20] Ministry of Finance and Economic Planning, Vision 2050 (December 2015), https://www.nirda.gov.rw/uploads/tx_dce/Vision_English_Version_2050_-31_Dec_2020.pdf.

[21] For example, thanks to its facilities, Rwanda in June 2021 hosted the inaugural Basketball African League.

Ratings of the quality of infrastructure in Rwanda are mixed. Rwanda has an overall score for infrastructure quality, as measured by the Global Competitiveness Index (GCI) in 2019, of 52, compared to an average of 45 for Sub-Saharan Africa (SSA). However, Rwanda and SSA lag behind all other regions in infrastructure quality. Rwanda surpasses all regional and ASEAN peers, except Malaysia, in the quality of road infrastructure and air transport services (Figure 2.5). On the other hand, Rwanda scores lower than more than half of its peers in electricity supply quality, exposure to unsafe drinking water and reliability of water supply. And Rwanda scores lower than most of its peers in terms of road connectivity, airport connectivity, electricity access and water transport facilities (Figure 2.6).

Figure 2.5: Metrics of quality (and efficiency) and access to infrastructure by regions and Rwanda versus peers

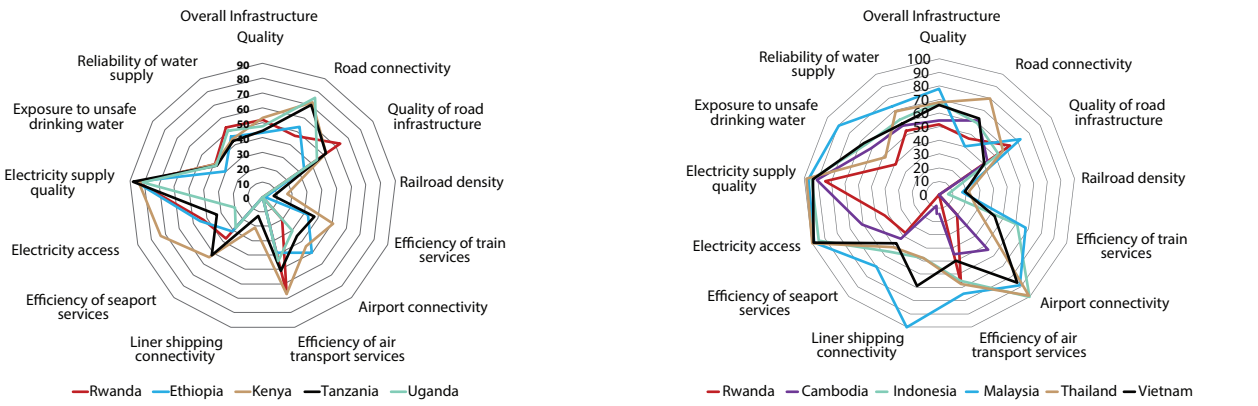


Source: WBG staff estimates

Although important progress has been achieved, significant needs remain in the financing of human capital. Rwanda surpasses its regional and ASEAN peers, except for Thailand and Vietnam, in public spending on all social assistance programs as a percent of GDP, according to the latest available data from the ASPIRE database. Government spending on health as a share of total expenditures, which rose from 6.8 percent on average in 2000-04 to 8.6 percent on average in 2015-19, is comparable to that of Kenya and Tanzania, and surpassed only by Thailand and Vietnam. However, Rwanda is lagging behind in terms of government expenditure on education, which fell from 22 percent of total government expenditure in 2000-04 to 12 percent in 2015-19. A similar trend is evident in other SSA countries, such as Kenya and Uganda, while Ethiopia and Tanzania have increased their education spending. ASEAN peers have also seen bigger education expenditure programs over time, except for Cambodia (Figure 1).

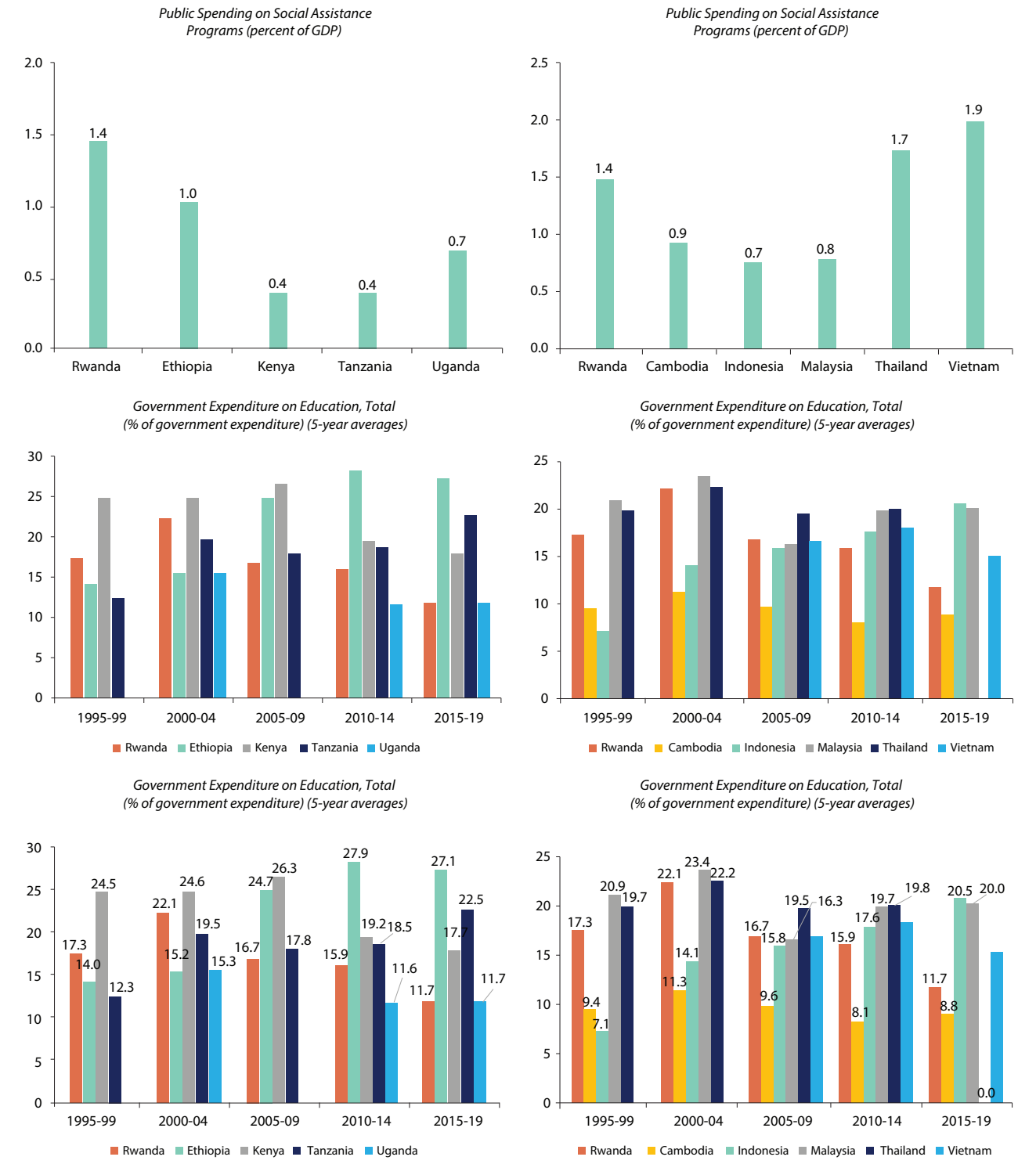
Supporting Rwanda's investment in human capital and reversing the setbacks due to the pandemic are important priorities in the short and medium term. Rwanda's human capital index (HCI) score is quite low at 0.38; a child born in Rwanda today will only be 38 percent as productive when she grows up as she could be if she enjoyed complete

Figure 2.6: Quality and access of infrastructure by sector (score 0-100 (best) in Rwanda versus peers



Source: World Economic Forum Global Competitiveness Index (GCI) 2019

Figure 2.7: Trends in social spending in Rwanda versus peers



Source: World Development Indicators; World Bank ASPIRE Database

education and full health[22]. Rwanda has an HCI index that is close to the global low-income average (0.375) but lower than the Sub-Saharan Africa average (0.40). The low HCI is mainly driven by poor results in education (both in terms of average length of school attendance as well as learning outcomes), and by high rates of stunting.

2.2. Further Increases in Infrastructure Investment Will Be Necessary to Achieve the Government's Development Goals

Despite these large investments, achieving the SDGs or the government's growth objective over the long term will require a significant rise in infrastructure investment, according to available estimates. Oxford Economics' Global Infrastructure Hub[23] estimates that Rwanda requires infrastructure investment of 8.78 percent of GDP per year to sustain an annual real GDP growth of 6.5 percent, and 14.63 percent of GDP per year to achieve the SDGs.[24] This is significantly larger than the estimated 9.06 percent of GDP (World Bank, 2019)[25] or the 8.23 percent of GDP (Oxford Economics' Global Infrastructure Hub)[26] required for Sub-Saharan Africa as a whole to meet the SDGs (Annex VII shows that the infrastructure investment gap in Rwanda is larger than in most other regional countries).

The main source of the infrastructure investment gap stems from transport, electricity, and telecom, while not discounting the importance of other infrastructure sectors, e.g. water, for socio-economic development and environmental sustainability. Rwanda's medium-term plan (jointly prepared with the support of the African Development Bank - AfDB) suggests that the country needs a total investment of 7.7 percent of GDP per year in the transport sector between 2019-24 to meet the sector's medium-term goals, or 6.81 percent of GDP higher than the 2017-19 average (this difference is referred to as the 'investment gap').[27] According to the Oxford Economics estimates[28],

Table 2.1: Annual investment requirements and investment gaps
(percent of GDP)

	Annual Investment Required to meet SDGs in 2040	Annual Investment to Meet Medium-term Govt Goals (2019-24)	Actual Public spending 2017-19	Investment Gap to meet SDG by 2040	Investment Gap to meet Medium term goals 2019-24
	(a)	(b)	(c)	(a)-(c)	(b)-(c)
Transport	1.36	7.66	0.85	0.51	6.81
Energy	2.47	1.59	0.61	1.86	0.98
ICTs	4.31	0.24	0.11	4.2	0.13
Water	0.65	0.8	0.3	0.35	0.5

Source: Oxford Economics' Global Infrastructure Hub, Ministry of Finance (Year). Budget Execution by COFOG. Government of Rwanda, and Government of Rwanda sectoral medium-term plans.

[22] Human Capital Index, World Bank, https://www.worldbank.org/en/publication/human-capital. The HCI measures the amount of human capital that a child born today can expect to attain by age 18 and is an indicator of the effectiveness of social investments. It looks across health, education, nutrition and skills and is calculated based on five indicators: probability of survival to age 5; children's expected years of schooling; quality of learning; adult survival rate, and the proportion of children who are stunted.

[23] Oxford Economics' Global Infrastructure Hub, https://outlook.gihub.org/region/Africa.

[24] Oxford Economics' Global Infrastructure Hub, https://outlook.gihub.org/countries/Rwanda. World Bank (2019) estimates that developing countries need approximately 4.5 percent of GDP per year until 2030 to meet the infrastructure related to SDGs.

[25] World Bank (2019). Beyond the Gap: How Countries Can Afford the Infrastructure They Need While Protecting the Planet. Washington DC. This is the preferred investment scenario. Under the low spending scenario, the investment requirement would be 4.41 percent of GDP while under the high spending scenario it would be 17.65 percent of GDP.

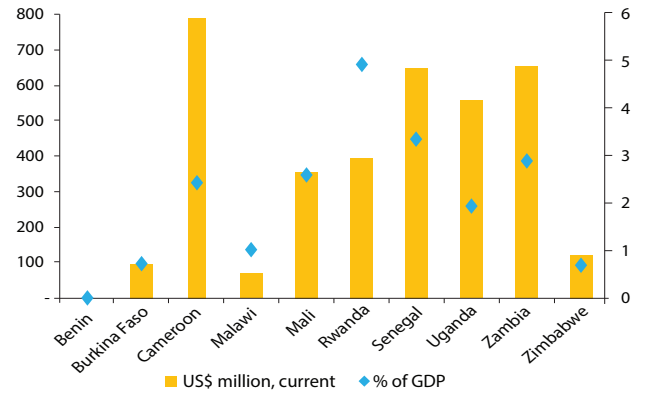
[26] Oxford Economics' Global Infrastructure Hub. https://outlook.gihub.org/region/Africa.

[27] Oxford Economics estimates are focused on air and road transport only, Rwanda's own medium-term plan is comprehensive and covered all subsectors of transport, including air, rail, road, water, pipeline, boarder post weigh bridge, and Urban Transport and Multi-Modal Facilities (See. African Development Bank (2013). Rwanda Transport Sector Review and Action Plan. Tunis.

[28] Oxford Economics' Global Infrastructure Hub. https://outlook.gihub.org/countries/Rwanda.

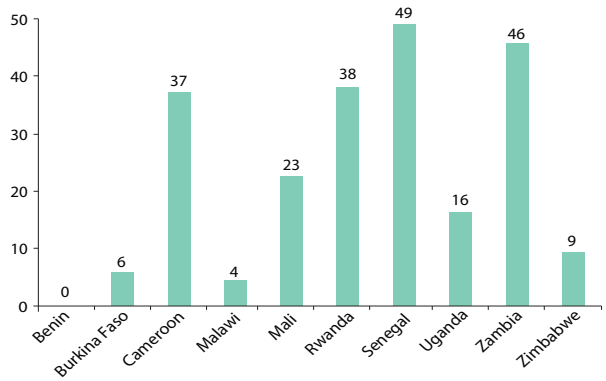
Rwanda needs to invest through 2040 a minimum of 1.36 percent of GDP per year in transport, or 0.51 percent of GDP higher than in 2017-19, to meet SDG (Table 3.1). Similarly, investment needs in the ICT sector to meet SDG exceed the 2017-19 average by 4.2 percent of GDP through 2040. And despite high levels of private investment in power (exceeding all peers in per capita terms except Senegal and Zambia—Figure 2.9) the energy investment gap to meet SDG equals 1.86 percent through 2040.

Figure 2.8: Private investment in the power sector
(US$ current & percent of GDP)



Source: IJ Global Database and World Bank PPI Database

Figure 2.9: Private investment in the power sector, per capita



Source: IJ Global Database and World Bank PPI Database

Box 2.1: Estimating the Infrastructure Investment Gap

Estimates of the sector specific and overall infrastructure gaps are based on the methodology applied by the Global Infrastructure Hub (GIH) for cross-country comparisons. Future financing provisions are based on two alternative scenarios: i) the current trend scenario assumes a continuation of current trends in sectoral infrastructure investments, with constant weights for country specific factors, including GDP/capita, population density etc., accounting for projected economic and demographic growth; and ii) the investment need scenario assumes that future infrastructure investment in Rwanda matches the performance of the best performing peer country (75th percentile of those countries with a similar income level), adjusted for the quality of the current infrastructure stock. Comparing the spending needs under these two scenarios yields estimates for infrastructure investment gaps, by sector and total.

To estimate infrastructure gaps specific to the United Nations (SDGs), the investment need scenario was adjusted. The additional investment needed to reach the SDG specific goals, for example access to electricity for all households, was estimated and added onto the investment need scenario. The sector specific and overall infrastructure investment gaps therefore become the difference between the current spending and the altered investment need scenario.

2.3. How to Finance Public Investment Priorities in a Fiscally Constrained Environment: Case of Public Infrastructure

Introduction

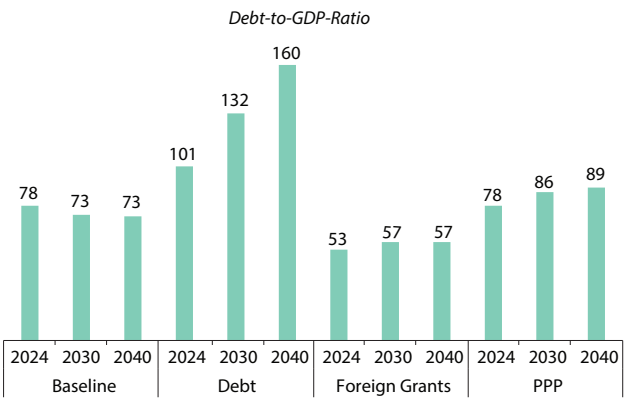
Two key policy questions going forward are what choices does the government face in financing public investment, and what are the implications of each choice for debt sustainability, growth, and welfare?[29] This case study focuses on the major sources of public investment spending, physical public infrastructure.[30] This analysis uses a CGE model (see Annex IV for a description of the model) to discuss the potential for, and impact of, increased infrastructure investment. The analysis compares the outcome of four alternative sources of infrastructure finance: foreign and domestic debt, the major source of infrastructure finance in the past; grants from development partners; increased domestic resource mobilization (the personal income, corporate income and value added taxes); and scaling-up of private-public partnerships (75 percent FDI, and 25 percent government borrowing). The potential for efficiency improvements to reduce the volume of resources required also is considered.

Public financing options and implications for economic performance and distribution

Government borrowing and grants

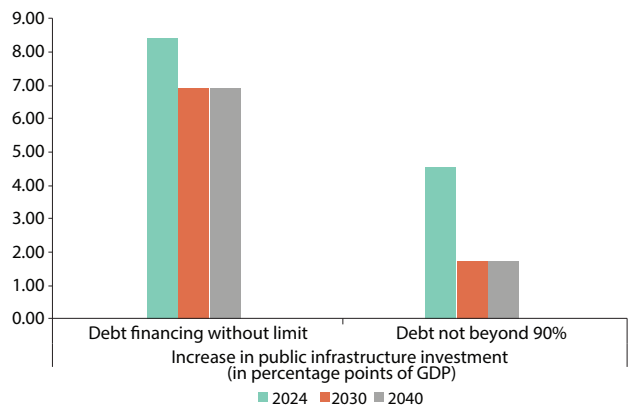
Rwanda will be unable to rely exclusively on government borrowing, as in the past, to finance the increase in infrastructure investment required to meet the SDGs. The CGE results show that if the entire amount of the increase in infrastructure investment were financed by borrowing, public debt would increase in 2024 from 78.1 percent of GDP in the baseline to 101 percent, and in 2030 from 73.4 percent in the baseline to 132 percent in this scenario (Figure 2.10). If we assume that the government debt would remain on a sustainable path and would not worsen Rwanda's risks of debt distress, the debt stock would not increase beyond 90 percent of GDP.[31] Under these assumptions, debt-financed infrastructure investment would reach a level 4.55 and 1.73 percent of GDP higher than in the baseline in 2024 and 2030, respectively. This would meet only about half the investment required to achieve the SDGs in 2024 and a quarter of the investment required between 2025 and 2040.

Figure 2.10: Closing investment gap and public debt



Source: WBG staff estimates

Figure 2.11: Infrastructure investment attained with not more than 90 percent government debt-to-GDP ratio



Source: WBG staff estimates

[29] With the government of Rwanda the World Bank is conducting a Public Expenditure Review with a special focus on key human capital sectors: education, health and social protection.

[30] Private sector financing represented about 29 percent of infrastructure in the past (See IJ Global Database and World Bank PPI Database)

[31] The IMF estimates the DSA threshold for "high-risk" of debt distress, for country's with "high capacity" such as Rwanda, at 90 percent of GDP in nominal terms.

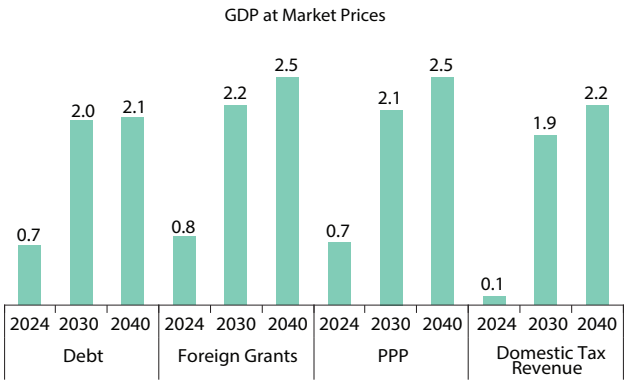
Continued reliance on grants would be critical for Rwanda's debt sustainability and economic performance. If the entire increase in infrastructure investment could be financed by grants from development partners, the ratio of public debt to GDP would be about 13.2 percentage points lower than baseline in 2030 and 12.2 percentage points lower in 2040, as GDP would be significantly higher while the debt level would be the same (Figure 2.11). However, to finance the increase in infrastructure investment required to meet the SDGs, foreign grants would need to increase between two to three times their level in the baseline in each year. By 2040, annual grants would have to rise by 7.7 percentage points of GDP relative to the baseline, which is unrealistic since sources of grant financing are limited and have amounted to only about 5 percent of GDP over the past decade. Furthermore, there has been low traction for developments partners to finance infrastructures through grants, as social spending has been in the past the main beneficiary of this type of funding.

Grant financing of public infrastructure, as expected, would generate a better economic outcome than borrowing. A hypothetical increase of infrastructure financing equivalent to 1 percent of GDP would lead to a 2.1 increase in GDP compared to the baseline in 2030 and 2.5 percent by 2040. This is higher than in the case where the infrastructure is financed by borrowing (Figure 2.12), as the required debt service payments reduce domestic savings. Household welfare, as measured by consumption, would increase by 1.5 percent in 2030 and 1.65 percent in 2040 relative to the baseline, as higher employment, boosted by infrastructure investment (1.2 percent higher than baseline by 2040) helps to boost incomes (Figure 2.13).

Infrastructure investment tends to benefit urban and richer households most. Although beneficial to all income levels, the rich appear to gain the most from infrastructure development. If infrastructure investment is financed through grants, then in 2030 the gain in consumption (relative to baseline) would be 0.4 percent greater for urban households than for rural households. This reflects the experience in Rwanda that major investments in the baseline are more linked to urban activities than rural ones. Thus, services and manufacturing output would increase by 3.8 percent and 2.4 percent respectively in 2030 compared to the baseline, while agricultural output would only increase by 0.9 percent (Figure 2.14).

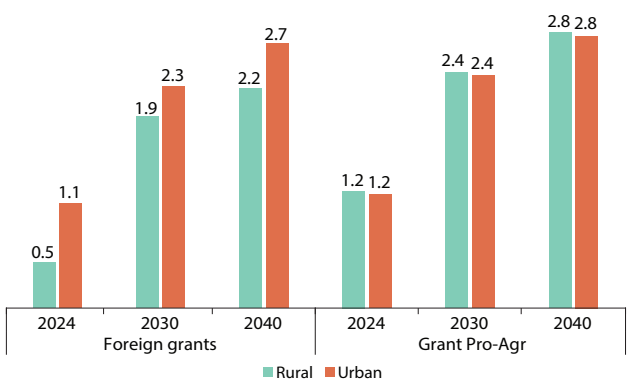
Infrastructure targeted at agriculture and financed through grants would ensure a substantially higher gain for rural household welfare and poverty reduction. If Rwanda were to comply with the Malabo Commitment, and allocate 10 percent of the future infrastructure investment to agriculture, allied activities and rural infrastructure, then rural households would experience significantly higher gains.[32] Assuming that infrastructure is financed by grants, household welfare in rural areas would rise

Figure 2.12: GDP effect of public infrastructure



Source: WBG staff estimates

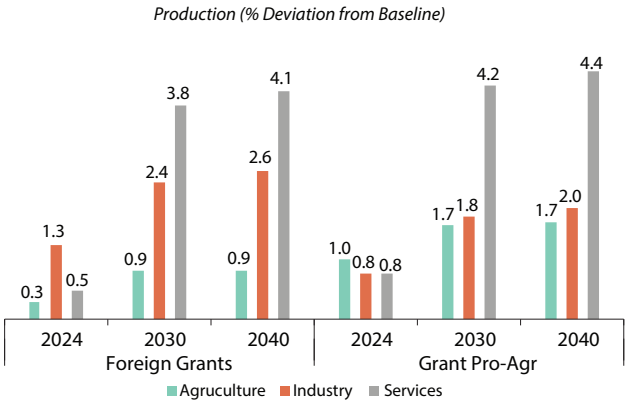
Figure 2.13: Welfare effect of infrastructure finance
(percent change from baseline)



Source: WBG staff estimates

[32] The elasticity of agricultural TFP to public infrastructure expenditure is based on estimations for Rwanda by Diao et al. (2007).

Figure 2.14: Sectoral effect of increased infrastructure



Source: WBG staff estimates

Figure 2.15: Reduction in number of poor with respect to baseline

Source: WBG staff estimates

by 2.4 percentage points over the baseline level in 2030, more than 0.2 percentage points more than in urban areas. These results from the CGE model are complemented by the Global Income Distribution Dynamics (GIDD) microsimulation framework to study how aggregate changes translate into distributional and poverty changes.[33] When 10 percent of the future infrastructure investment (equivalent to 1 percent of the GDP) is allocated to agriculture and financed by grants, around 34,000 people would be lifted out of poverty in 2030 compared to the baseline scenario. Without a reallocation to agriculture, the number of people lifted out of poverty by 1 percent of GDP infrastructure investments would be 15 percent lower (Figure 2.15) Given the declining trend of the growth elasticity of poverty in Rwanda in recent years, this finding stresses the importance of reallocating public investments toward rural-related activities.

Domestic resource mobilization

Increased taxes could contribute part of the resources required to boost infrastructure investment. Rwanda has made great strides in increasing tax revenue collection, the top source of domestic revenue, in recent years. Tax revenue rose from 10 percent in 2010 to 16 percent in 2019 or well above the sub-Saharan Africa average of 12 percent. Relying only on domestic revenue mobilization to fill the infrastructure investment gap entirely would improve substantially the debt situation. The improvement in public finances is similar to the scenario where the rise in infrastructure investment is financed by grants, as the debt to GDP ratio falls by 15.5 percentage points in 2030 and 15 percentage points in 2040, relative to baseline. To fill the infrastructure investment gap entirely through higher taxation would increase tax revenues from 16 percent of GDP in 2040 in the baseline to 24 percent of GDP, which would have important implications for incentives, and may not be easily collected. Before the crisis hit, the authorities were committed to increase tax revenues by 0.2 percentage points of GDP annually through its medium-term revenue mobilization plan.[34] All this said, bringing in more tax revenues is now warranted, given emerging spending needs, declining grant financing, and little borrowing space. Rationalizing Rwanda's extensive tax incentives will support this agenda, as will the recently adopted property tax. Implementing these measures to boost domestic revenue mobilization after the COVID-19 crisis abates will be crucial to preserve debt sustainability while supporting the nascent recovery.

[33] The CGE-GIDD is a "top-down" macro-micro simulation framework (Maliszewska, Osorio-Rodarte and Gupta, 2020) that uses heterogeneity observed in household surveys to distribute macroeconomic shocks, with the labor market connecting the CGE and the GIDD models. The CGE framework estimates the impact of the different options to finance public investment priorities on labor market outcomes -including sectoral employment and skill premia- and the GIDD framework reallocates workers across sectors and simulate the earnings for different groups of the population.

[34] The government new goal under the Medium-term Revenue Strategy (MTRS) is to increase tax-to-GDP by 1 percentage point between 2021 and 2024, through various tax policy and tax administrative measures.

Increasing infrastructure investment through domestic revenue mobilization yields lower outcomes for households and the economy as a whole compared to external financing sources. Financing a hypothetical increase in infrastructure investment equivalent to 1 percent of GDP through higher taxes (assuming the same percentage increase on each tax category) would raise GDP by 1.9 percent in 2030 and 2.2 percent in 2040 over baseline levels. The increase in GDP is significantly less than with foreign sources of financing because higher taxes tend to reduce the domestic savings available for productive private investments. However, the welfare implications of this scenario are disappointing because of price tensions linked to increased taxes, particularly in short term. Household welfare declines by 1.8 percent over baseline levels in 2024 and by 0.2 percent in 2040. The impact on growth and household consumption varies, depending on whether higher tax revenues are achieved by raising the personal income tax, the corporate income tax or the VAT.[35]

Efficiency

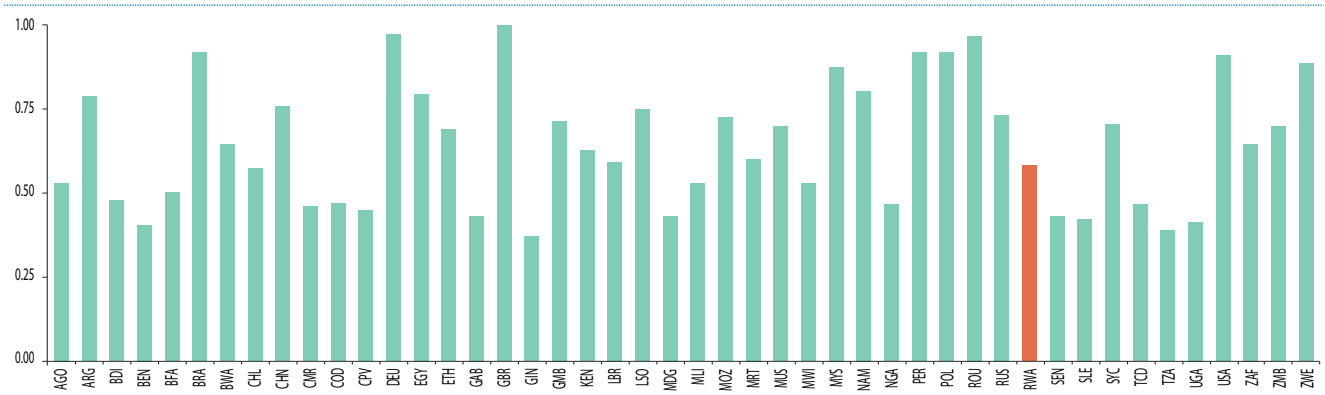
Improving the efficiency of resource use could complement efforts to increase the availability of public resources devoted to infrastructure. There remains scope for improving efficiency and quality of infrastructure in Rwanda. An efficiency index derived from data envelopment analysis (see Annex III) is used to compute the efficiency of infrastructure investment and the quality of infrastructure services (Figure 2.16). The index is based on the provision of selected infrastructure services, including the number of hospital beds, broad band subscriptions, access to drinking water, road traffic, logistics performance and port infrastructure. The most efficient country is assigned a score of one. Rwanda has a score of 0.55, indicating that the country has some scope for improving the efficiency of infrastructure investment. Such improvements could substitute, to some extent, for any shortfall in investment compared to what is required to achieve the SDGs.

Impact of private sector financing of infrastructure

The need for private sector infrastructure finance is significant, even if Rwanda obtains the most it could from public sources of finance, while maintaining debt sustainability. The maximum official finance for infrastructure is estimated based on past performance and indicators from Rwanda's aspirational and structural peers. Given that Rwanda is already at moderate risk of debt distress, the increase in borrowing is limited by assuming that the debt to GDP ratio is no more than one percentage point higher than in the baseline. Grants are assumed to remain at baseline levels, since it is unlikely that significant increases from development partners will be forthcoming at this

Figure 2.16: Capital efficiency scores

Average (2008-2018)



Source: WBG staff estimates

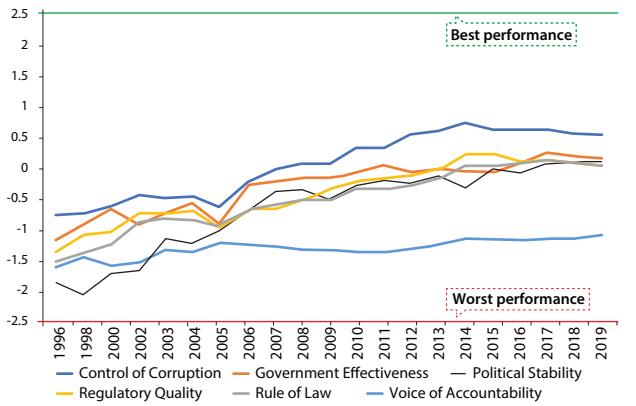
[35] The tax revenue scenario is simulated by increasing the taxation rate. It does not simulate any improvement in tax collection efficiency.

point. And the ratio of domestic tax revenues to GDP is assumed to rise from 13-14 percent in the baseline to 18 percent. Under these assumptions, 55 percent of infrastructure investment needed to meet the SDGs would be financed by the private sector. As we assume that private infrastructure investment comes in the form of PPPs, where the government takes on debt equal to about quarter of the total investment, the public debt to GDP ratio would be 6 percentage points higher than baseline in 2030 and 7 percentage points higher in 2040. This increase would be below that incurred if additional infrastructure investment were financed by borrowing, but above that incurred if grants were relied on.

Increased private sector financing of infrastructure investment could make a significant contribution to growth and welfare. If an increase in infrastructure investment equivalent to 1 percent of GDP were to come from PPPs, supported by an equivalent of 0.25 percent of GDP of public resources, then GDP would be 2.1 percent higher than baseline in 2030 and 2.5 percent higher in 2040. This is a bigger gain than in any public financing option either by borrowing or by taxes. This result seems to indicate that the loss of domestic savings related to additional debt and repatriation of profit of PPPs are offset by a relatively high productivity generated by PPPs. However, the distributional impact would also be similar to that of public financing options, favorable to the richest if there is not specific targeting to agriculture-related infrastructure.

While Rwanda has made considerable progress in improving governance between 2000 and 2014, there is still a gap to reach the global best practice. Improvements in governance are key to increasing the efficiency of investment by limiting the diversion of resources and improving the execution of projects. Corruption and government effectiveness are defined according to the Worldwide Governance Indicators database (Kaufman, Kraay and Mastruzzi, 2010).[36] The scores range from -2.5 to 2.5, with a higher score implying better governance. Most African countries remained at roughly the same score, in terms of both indicators, between 2000 and 2018. Rwanda, however, had a corruption score in 2000 about equal to the average for Sub-Saharan Africa, but was one of the top four performers in the region in 2018. Similarly, in 2000 Rwanda was just a little better than the average performer in Africa in terms of government effectiveness, but in 2018 was the sixth best in the region. However, the quality of Rwanda's institutions seems to have stagnated since 2014, and remain below those of Singapore as well of global best practice (Figure 2.17 and Figure 2.18).

Figure 2.17: Institutional performance: Rwanda's distance from worst and best performance



Source: WBG staff estimates

Figure 2.18: Institutional performance: Rwanda versus Singapore

Source: WBG staff estimates

[36] World Bank, Worldwide Governance Indicators, http://info.worldbank.org/governance/wgi/Home/Documents

2.4. Private Sector Participation in Infrastructure Investment

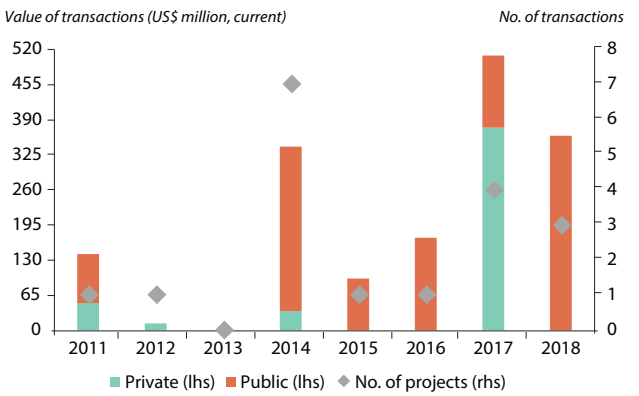
Greater private sector finance for infrastructure will be critical to achieving the government's development aspirations. The establishment of public private partnerships (PPPs) can help to mobilize private capital and management capacity, and improve quality of service, although their long-term nature and complex risk allocation can bring substantial challenges (see Box 2.3). This section discusses the size and form of private sector financing in Rwanda, institutional and regulatory issues, the outlook for private sector infrastructure financing and the importance of strong institutions, and the impact of increased private sector infrastructure financing on economic activity, debt and welfare.

The state of private infrastructure financing in Rwanda

Private participation in infrastructure (PPI) financing in Rwanda has been growing but remains small.[37] Infrastructure project commitments totaled US$1.63 billion, of which less than 30 percent was from the private sector (Table 2.2). Of the 18 infrastructure projects that Rwanda has commissioned since 2008 (some completed, others ongoing), six had their financing committed by the private sector – three of them exclusively and three as private-public financing. Of the total, 73 percent of the value (US$348 million) was financed by debt and 17 percent (US$79 million) by equity; there is no information on how the remaining US$47 million was financed.

PPI has been high, but volatile and dominated by the power sector. Rwanda's PPI commitments of 5.6 percent of GDP since 2008 exceeded that of structural comparators (Burkina Faso, Malawi, Mali and Uganda),[38] twice as high as the second-best performer (Uganda) and six times higher than the worst performer (Malawi). And Rwanda's PPI (as a percent of GDP) was very close to that of the highest performer among aspirational comparators, Senegal (6.0 percent of GDP). Transactions were recorded in 2008 (US$50 million), 2012 (US$12 million), 2014 (US$36 million) and 2017 (US$375 million in three transactions) (Figure 2.19). Power generation

Figure 2.19: Infrastructure investments increased since 2014



Source: IJ Global Database and World Bank PPI Database

Table 2.2: Infrastructure has been largely debt financed

Sector	Equity			Debt			All
	Private	Public	Total	Private	Public	Total	
Renewables electricity generation	9	1	**10**	3	47	**50**	113
Non-renewable electricity generation	51	0	**51**	345	91	**436**	487
Electricity transmission & distribution	0	23	**23**	0	95	**95**	118
Roads	0	39	**39**	0	546	**546**	586
Water treatment & distribution	19	21	**40**	0	283	**283**	323
Grand Total	**79**	**84**	**164**	**348**	**1,063**	**1,410**	**1,627**

Source: IJ Global Database and World Bank PPI Database
Note: Includes only commitments where financing is identified.

[37] The key sources of PPI information include the World Bank's PPI Database, the joint African Development Bank & Infrastructure Consortium Infrastructure Financing Trends in Africa report, and the IJ Global Database.

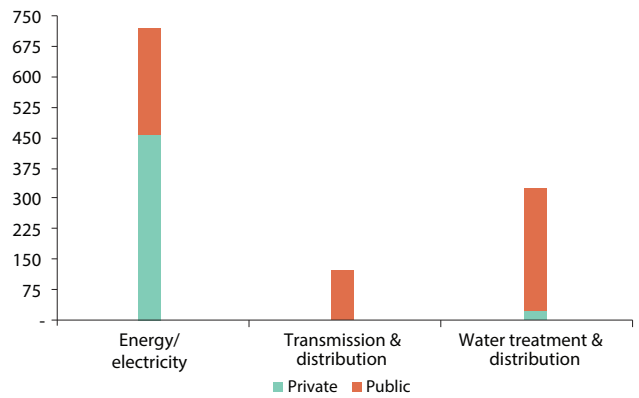
[38] These are low-income countries with GDP per capita (based on Atlas method) below US$1,035, and lower middle-income countries (LMICs) have GDP per capita (Atlas method) of between US$1,036 and US$4,045.

projects (87 percent non-renewable projects and 13 percent renewables) received 96 percent of the total PPI commitments from 2011 to 2018, with the rest going to water projects (Figure 2.20 & Table 2.3). The bulk of the public financing has gone into roads, water treatment and distribution, and electricity generation, transmission, and distribution.

FDI has played a role in building Rwanda's infrastructure. Total FDI inflows rose from US$119 million (2.2 percent of GDP) in 2009 to US$420 million (4.1 percent of GDP) in 2019 (Figure 2.21). Inflows as a share of GDP exceeded the level in Rwanda's structural comparators[39] and were higher than the Sub-Saharan Africa average. In 2019, the stock of FDI amounted to US$838 million, or 25.6 percent of GDP (Figure 2.22). In 2018, the stock of FDI in the two main infrastructure sectors that benefited from FDI inflows (electricity and ICT) equaled 40.1 percent of the total FDI stock. FDI inflows to infrastructure sectors totaled US$235 million in 2018, or 62 percent of total FDI inflows.

PPPs have played an important role. Whether infrastructure projects are publicly or privately financed, they usually rely on long-term public undertakings: long-term debt in the case of publicly-financed projects and long-term contractual agreements (20+ years) in the case of PPPs. The only exceptions are infrastructure projects whose revenues are sufficient to make them commercially viable on a standalone basis without government support (e.g. toll roads, ICT).[40] Rwanda's long track record in PPPs shows the institutional and regulatory framework has been working. The PPI Database identified six transactions to 2015, all in the energy sector for a total investment of US$516 million. Ministries and government departments identify more PPPs prior to approval of the PPP Law in 2016; a total of 39 closed transactions. Of these, 29 were in the energy sector (including micro hydro projects), and PPPs have been pivotal to growth in Rwanda's power sector over the past decade. The Kigali Bulk Water Supply Project was one of the first water projects to be developed using a PPP model in sub-Saharan Africa. PPPs were also undertaken in other sectors and at the municipal level, including three ICT, one manufacturing, and six mining projects. All the early PPPs were processed and procured on a project-by-project basis drawing on sector and/or project-specific legislation. The 2016 PPP law has successfully delivered more than 24 PPPs

Figure 2.20: The energy sector has been the dominant receipt of infrastructure financing



Source: IJ Global Database and World Bank PPI Database

Table 2.3: Energy sector investment by source of energy

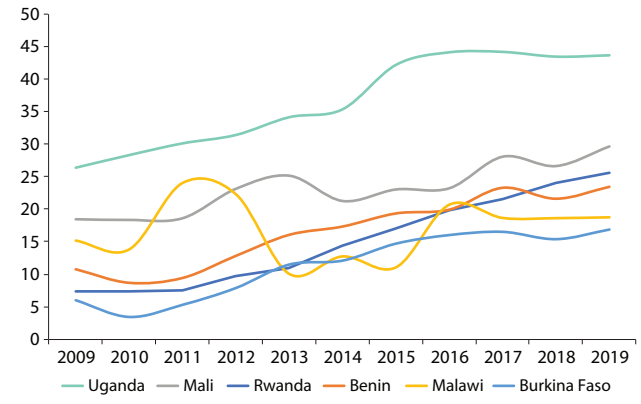
Sector	Private	Public	Total
Energy/electricity	455	264	718
Biogas generation	36	0	36
Coal-fired generation	345	0	345
Gas-fired generation	51	91	142
Hydro generation	23	6	29
Solar generation	0	48	48
Transmission & distribution	0	118	118
Roads	0	586	586
Water treatment & distribution	19	304	323
Total	**474**	**1,153**	**1,627**

Source: IJ Global Database and World Bank PPI Database
Note: Includes only commitments where financing is identified.

[39] The structural comparators used for the figures of this section are low income landlocked countries of Sub-Saharan Africa: Burkina Faso, Malawi, Mali, Uganda and one aspirational comparator from a lower middle-income country, Benin.

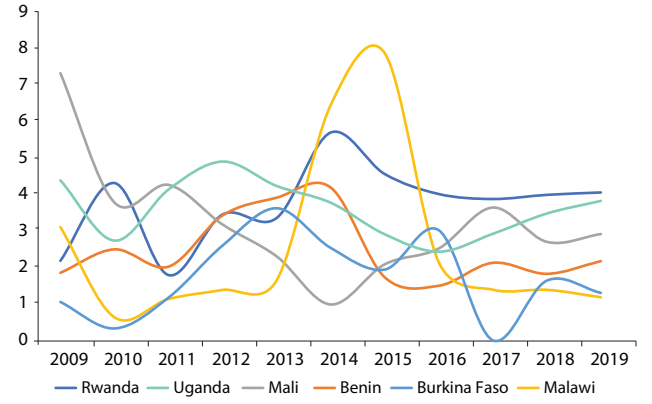
[40] PPI without any public sector participation is only suitable where the market is competitive or if economic regulation can effectively prevent the abuse of monopoly power. Of the sectors of interest to Rwanda, social housing is most suited to pure private provision, as strong regulation could solve most problems without worrying with a PPP.

Figure 2.21: Total inward FDI stock: Rwanda vs. comparators 2010-2019
(percent of GDP)



Source: FDI Snapshot and UNCTAD

Figure 2.22: Total inward FDI inflows: Rwanda vs. comparators 2010-2019
(percent of GDP)



Source: FDI Snapshot and UNCTAD

in ICT, energy, transport and logistic, hospitality, and housing, generating a total infrastructure investment of more than US$900 million. The sectors targeted for investment promotion and deals, structured as PPPs in Rwanda, include transport and logistics, ICT, energy and affordable housing (Box 2.2). The total number of infrastructure-related agreements signed in RDB's Transaction, Structuring and Support Division (TSS) is twenty-three: ICT (10), energy (5), transport and logistics (5), and affordable housing (3).

Box 2.2: Private sector participation in infrastructure in Rwanda - A snapshot

Transport and Logistics: The government has partnered with the private sector to make significant investments in transport and logistics infrastructure, including:

1) Development of national paved road network of over 1,700 km.
2) Launching of Rwanda's first inland dry port specializing in the provision of sea freight, air freight, haulage, warehouse, clearance and shipment services. The port contains a 20,000 sqm container station.
3) Ongoing construction of an airport in Bugesera worth US$400 million, which is expected to have a passenger terminal covering 30,000 square meters, 22 check-in counters, 10 gates, and six passenger boarding bridges.

The second and third were sourced and structured through special incentivization. Additional investment is planned to develop railway infrastructure to connect Rwanda to Tanzania, Uganda, Burundi, and Congo, DRC.

ICT: The government has partnered with the private sector to heavily invest in IT infrastructure, including 7,000km fiber and 95 percent 4G LTE coverage. The sector has grown annually at a rate of about 11 percent from 2005 to present and is expected to grow from US$700 million in 2020 to US$5 billion in 2025. Considerable success has been achieved in attracting FDI to the ICT sector. Notable investments in the last 3 years include:

1) The world's first drone delivery service for medical items;
2) Efficient transport/mobility solutions: ride sharing, electric mobility and assembly;
3) Digital healthcare services, medical AI and machine learning;
4) Admission to Alibaba's Electronic World trade platform;
5) The first smartphone manufacturing plant in Africa, currently operational in the Kigali special economic zone with near 20,000 devices produced; and
6) Training and employment (to global standards) of 100 new Rwandan software engineers every year.

Box 2.2: Private sector participation in infrastructure in Rwanda- A snapshot *(contd.)*

All of these were sourced and structured through special incentivization. An additional US$200 million is targeted to populate an ever-expanding knowledge hub (Kigali Innovation City), the ICT getaway to Sub-Saharan Africa, which has world-class learning institutions, tech companies, innovation friendly financing and strong government commitment. A portion of the funds also will be devoted to Rwanda's Innovation Fund, a privately managed, hundred million dollar fund for the development of world-class innovative entrepreneurs and enabling technologies in the ICT sector within Rwanda, East Africa and in Sub-Saharan Africa.

Energy: More than US$100 million is targeted for investment into off-grid power solutions. The government is committed to achieving universal access by 2024; in August 2018, 47 percent of the population had access to electricity, with 12 percent connected to off-grid energy sources.

The government plans to increase the percentage of people connected to off-grid electricity to 48 percent in 2024. The government estimates that providing solar home systems (SHS) for 470k low-income households would increase the rate of electricity access by 14 percent. Mini-grids of 10-200kW for ~2k villages serving 330k households, at an estimated cost of US$114 million, have the potential to increase the rate of electricity access by 10 percent. A quarter of the deals, which receive special incentives through the government, are related to energy concessions. Considerable success has been achieved in attracting FDI in the energy sector, and Rwanda's installed capacity is expected to surpass peak demand for years to come (if commissioning schedules are followed).

Notable investments in the sector in the last 3 years include:

1) 80MW peat power plant in Rwanda's southern province set to commission later this year.
2) 55MW power plant, which will extract methane in Lake Kivu, set to commission in 2022.
3) 48 MW hydropower plant on the Rusizi river set to commission in 2026.
4) 43MW hydropower plant on the Nyabarongo river set to commission in 2024.
5) 27MW hydropower plant on the Rusumo river set to commission later this year.
6) 15 operational investors in the solar sector whose pledged investment amounts to US$650 million and installed capacity will be 150MW.

Affordable Housing: Marketing efforts have been targeted at affordable housing developers. More than US$100 million in targeted investment for affordable housing is projected to generate 30,000 affordable housing units (approximately 3000 each year). The seed fund for affordable housing has been partially mobilized. A mortgage refinancing company is planned so that resources devoted to affordable housing can be recycled. The government has been investing in IDP villages where people in high-risk zones or low-income houses are resettled (social houses fully funded by the government or development partners). Rwanda Housing developed a database of employees who are willing to take houses from affordable housing projects in Kigali. Nearly 7,000 are eligible for affordable housing financing. Private sector involvement has been incentivized through provision of land at book value (65 ha readily available, and 97 ha earmarked) and free basic infrastructure (roads, sewage, water). However, drawing investors into this sector has presented more of a challenge. There have been 4 operational investors in the affordable housing sector, who have pledged a total of US$490 million to build 14,000 affordable housing units over the next 5 years (short of the 3000 p.a. target).

Source: Forward Looking Joint Sector Review for FY (2018/2019); Least Cost Development Plan (2019 – 2040); Rwanda Investment Teaser (2020); Accelerating investments in Affordable Housing Development (2020); Investment Incentive Performance Review (2020)

Determinants of private sector infrastructure financing in Rwanda

Quality of institutions

Rwanda has a strong legal framework for FDI. There are no *de jure* restrictions on foreign ownership, capital flows, or capital gain exemptions on sales or transfer of shares. The February 2021 Investment Law formalized the process for the review of strategic investment projects, introduced more performance-based investment incentives, required efforts to accelerate the resolution of investors' issues, and identified priority sectors. Since establishment of the RDB, company registration can be completed within a few hours, all permits and documents can be obtained at RDB's one-stop shop, investment promotion activities have increased and have been more targeted to priority sectors, and private sector concerns are better addressed across the wider government. Eight of the 17 high-risk grievances registered with RDB's Reinvestment and Aftercare Department have been resolved, resulting in US$26.6 million in retained investment. Rwanda now ranks second in investment climate for FDI in Sub-Saharan Africa, after Mauritius.

Further improvements in governance would help attract greater private sector resources to infrastructure. IFC (2021),[41] using a panel dataset for 38 Sub-Saharan African countries, finds that the institutions that matter most are those that promote the control corruption, the quality of the regulatory environment, political stability, foster the voice of citizens in enforcing government accountability, improve enforcement of the rule of law (which is critical for enforcing contract), and improve effectiveness of the government, in that order (see Box A1). Rwanda received more private investment (as a share of GDP), and ranked higher on all of the WGI indices for these issues (except for ensuring voice and accountability) than all structural and most aspirational peers.[42] Nevertheless, the IFC (2021) model predicts that a one standard error improvement in the quality of these institutions would attract between 2.0–6.4 percent of GDP per annum in PPI over the period 2021–32 (Table 2.4), slightly higher than in Kenya and Senegal.[43] By contrast, if the average quality of institutions were to remain the same as over 2008-19, then PPI over the next 12 years would be substantially lower (Table 2.5). Institutional

Table 2.4: Average annual PPI with a one standard error improvement in institutions: Rwanda, Kenya, Senegal
(percent)

	Control of corruption	Government effectiveness	Political stability	Regulatory quality	Rule of law	Voice & accountability
Rwanda	6.4	2.0	5.1	5.4	3.9	1.5
Kenya	3.9	2.3	3.2	3.3	4.6	2.0
Senegal	7.7	1.8	3.0	3.1	2.2	5.1

Note: We assume a 5 percent real GDP growth rate for all country over the period 2020-31.

Table 2.5: Average annual PPI in the next 12 years: one standard error improvement in institutions vs. no change
(percent)

	Control of corruption	Government effectiveness	Political stability	Regulatory quality	Rule of law	Voice & accountability
No change in institutions	1.1	0.6	0.8	0.7	0.5	0.5
One standard error improvement in institutions	6.4	2.0	5.1	5.4	3.9	1.5

[41] IFC (2021). Drivers of Private Participation in Infrastructure. Washington DC. Internal Draft.

[42] The structural comparators are low income countries with GDP per capita very close to that of Rwanda. They include Burkina Faso, Malawi, Mali and Uganda. The aspirational comparators are lower middle-income countries (LMICs), with higher per capita GDP than Rwanda, including Benin, Cameroon, Senegal, Zambia, and Zimbabwe.

[43] These projections assume an average annual growth rate of GDP (in US$ current prices) of 5.0 percent over this period.

reforms to strengthen institutions that control corruption and those that improve the quality of regulatory policy, for example strengthening public investment management (better project planning, selection and execution), procurement systems, the PPP framework, and quality assurance systems for infrastructure, appear be most impactful in attracting additional PPI inflows into Rwanda, followed by those that enhance political stability and enforcement of the rule of law, and finally those that enhance government effectiveness and strengthen citizens role in enforcing government accountability.

Diagnostic-based assessments suggest that ICTs, transport, energy and housing can be the key drivers of PPI in Rwanda over the medium term. These sectors have substantial development gaps, and currently have infrastructure gaps that can be bridged through private sector solutions. IFC assessment suggests that infrastructure worth at least US$550 million[44] could be financed through private sector solutions in these sectors over the next 5 years, if reforms are taken to tackle priority sector-specific constraints to infrastructure financing. Some of the priority sector-specific reforms include strengthening the overarching institutional and regulatory framework for PPPs, as well as sector-specific PPP frameworks, entrenching competitive procurement, providing an effective framework for private sector participation in off-grid electrification, promoting regional electricity trade, commercializing state-owned Fiber Networks, and developing a regulatory framework to promote broadband open access. If such reforms are implemented, the energy sector could attract at least US$100 million, transport US$150 million, ICTs US$90 million, and housing US$120 million. Annex II provides detailed information on private sector participation in, and the challenges facing, ICTs, transport and energy.

Sectoral regulatory framework: Case of PPPs

The government of Rwanda identified PPPs as essential tools for promoting infrastructure in Vision 2050 and has made good progress towards establishing an appropriate legal and regulatory framework for PPPs. Before the 2016 PPP Law, improvements included the adoption of PPP provisions in the 2007 law on public procurement, setting principles for PPP implementation in the 2008 National Public Investment Policy, issuance by MINECOFIN of a PPP handbook in 2009, the promotion of PPPs in rural areas under the 2012 Decentralization Implementation Policy, and release by the RDB of a PPP Policy in 2014.

Key impediments to Rwanda's initial PPPs (before the 2016 PPP Law) included:

- **Unsolicited proposals (USPs).** Most PPP projects were based on unsolicited proposals (USPs) procured through direct negotiation, without clear procedures for submitting USPs and evaluating their suitability, or cost comparisons or competitive pressures to ensure value for money (VfM). For example, the directly negotiated solar PV deals in Rwanda—at over USc 20/kWh—were more expensive than comparable, competitively bid projects in the region.[45]
- **Inadequate project preparation.** Project preparation was not sufficient to ensure contracts met development objectives and selection of the right parties. For example, prices and terms and conditions of contracts signed with independent power producers varied across producers.
- Inappropriate procurement processes. PPPs were procured using the public sector's general tender procedures, and lacked the detailed, multistage PPP-specific processes needed to ensure transparency and competition during procurement. Projects also took too long to achieve financial close once they had been signed.

[44] This amount is with the range from the WBG econometric model projections of 2.3–5.8 percent of GDP per year, which translates to US$267–671 million.

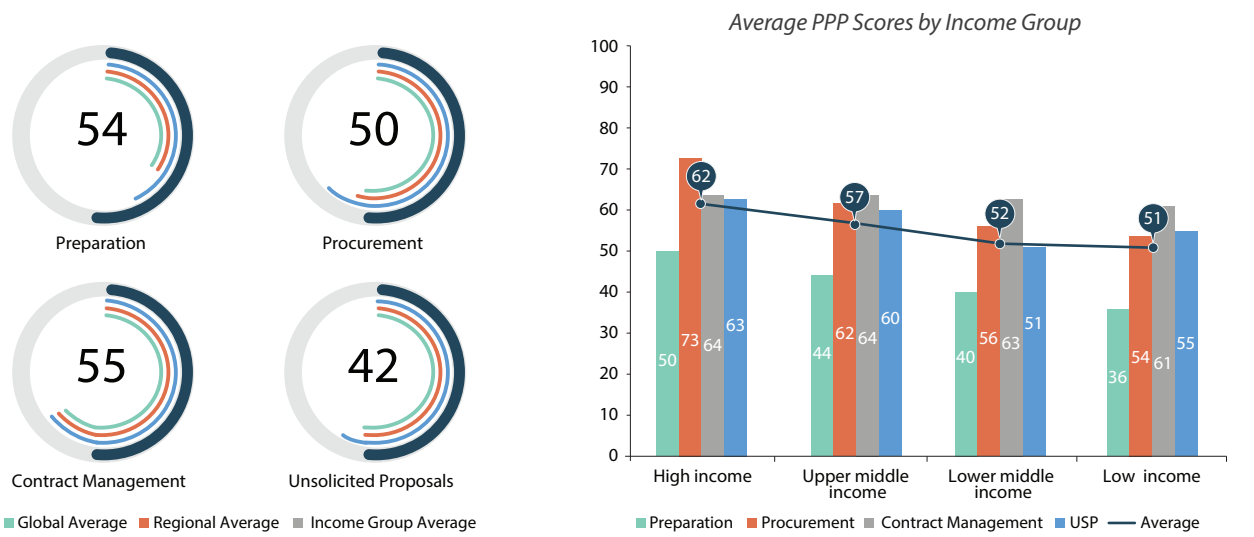
[45] Eberhard, Anton, Katharine Gratwick, Elvira Morella, and Pedro Antmann. 2016. Independent Power Projects in Sub-Saharan Africa: Lessons from Five Key Countries. Directions in Development. Washington, DC: World Bank. p.64

- **Lack of capacity.** Line ministries and agencies pursuing PPP projects generally lacked the capacity to advise the negotiating authority on technical, commercial, and policy matters raised by the project. Many private sector partners were also inexperienced in negotiating and implementing PPPs, in part because Rwanda was at the early stage of attracting foreign investment, which led to project delays.

The 2016 PPP Law brought in basic features of successful PPP programs elsewhere. The PPP law made a significant regulatory leap by establishing arrangements for renegotiating PPP agreements, although Rwanda remained one of the declining number of economies that do not require USPs to be procured using a competitive procedure.[46] In 2018, RDB issued PPP guidelines to describe the process for preparing, procuring, and implementing PPP projects, committing the GoR to systematically develop PPP projects and competitive procurement, while ensuring transparency, fairness, nondiscrimination, and accountability.[47] The new framework has so far delivered more than 24 PPPs in ICT, energy, transport and logistic, hospitality, and housing, generating a total infrastructure investment of more than US$900 million..

Rwanda's PPP framework has mixed reviews in the World Bank's global ratings. Rwanda's score for PPP preparation of 54 out of 100 is higher than global, regional, and income-group averages, and Rwanda is close to benchmarks on the procurement of PPPs (Figure 2.23). But Rwanda under-performs in relation to contract management, which is given relatively less attention in the PPP Act and Guidelines, and for USPs, mainly because they are removed from the competitive procurement process established by the Act.

Figure 2.23: Thematic Scores for PPPs (2020)
(Rwanda vs Benchmark Groups)



Source: Benchmarking Infrastructure Development Database (https://bpp.worldbank.org/)
Note: Score 1–100, N=140.

[46] World Bank. 2020. Benchmarking Infrastructure Development 2020: Assessing regulatory quality to prepare, procure and manage PPPs and traditional public investment in infrastructure projects. Washington DC.

[47] The government has designated institutions to manage the PPP process. Specialist units, including the Public Investment Committee (PIC) within the MINECOFIN, the Strategic Investment Department of the Rwanda Development Board (RDB) and the RWB guide the PPP program. A PPP Steering Committee was established as the approval body for PPP projects, with RDB the Secretariat to the committee.

Box 2.3: Benefits & cost of private financing of PPPs: Lessons for effective use of PPPs to improve efficiency

PPPs can reduce certain project risks, while creating new ones. Transferring design, construction, maintenance, and operational risks to a private partner reduces the government's fiscal risks,[a] particularly in well-structured PPPs that carefully transfer the risk components that can be executed by a private partner better than the public partner. However, tying the government to a long-term relationship with the private sector creates new explicit and implicit fiscal risks.

Even under the best design, PPPs can still face several challenges. First, they are more costly and typically more risky than purely public-financed projects, because government usually borrows at a cheaper cost and can reduce the risk of the infrastructure portfolio by pooling risks from different projects.[b] Second, they require more complex and specialized skills, which make them more costly to administer. Third, they create new explicit or implicit fiscal risks arising from future poor performance of the private partner, poor project design, poor maintenance, or other future shocks, including economic, technological, demographic, and preferences.

However, fiscal risks are typically ignored at project selection and implementation, due to fiscal illusion arising from three sources.[c] First, budgeting and accounting practices used for PPPs allow governments to increase infrastructure without an immediate impact on public sector deficits or debt, thus concealing the fact that the government is incurring a liability. Second, the presence of a private partner, and the fact that the private partner typically uses the asset during the duration of the contract, creates an illusion that PPPs are not public assets. Third, it can be difficult to assess fiscal risks properly, which is further exacerbated if there is political interference. PPPs are typically exposed to optimism bias – i.e. reliance on optimistic scenarios and disregarding risk. Unforeseen future events that can increase fiscal risks (e.g., changes in technology or preferences, or even disasters) tend to be ignored. Moreover, governments typically ignore that such future events may give rise to renegotiation, and thus are underequipped for such negotiations, giving the private partner a bargaining advantage. These challenges tend to be amplified in the case of unsolicited PPPs, as assessments show that they create significant fiscal risks and government issues, without necessarily accelerating the delivery of infrastructure projects as envisaged.[d]

Weaknesses in public investment management (PIM) typically exacerbate fiscal risks. Most fiscal risks arise from poor quality of project selection, inadequacy of a PPP for the project at stake, government willingness to sign a contract with no realistic financial feasibility, and poor structuring of the PPP contract.[e] These challenges often arise when PPPs are considered off-budget, and governments create parallel evaluation, approval, and management processes for PPPs, thus evading legislative scrutiny or oversight, and jeopardizing fiscal sustainability. Moreover, these fiscal risks are more pronounced in PPPs implemented by subnational government and public corporations, without the oversight of the central government.

Given all these challenges, it is key to carefully consider if a PPP is the best modality to deliver a given project. As a rule of thumb, a PPP should only be seriously considered if the project size is above a certain threshold (typically US$50 million), and if assessments suggest that a PPP procurement has sufficient value for money drivers that can be demonstrated, while also acknowledging transaction and contract management costs.[f]

To procure PPPs soundly, governments need to strengthen PIM throughout the public sector, from procuring to monitoring agencies. The critical governance elements that governments should have in place to manage the fiscal costs and risks from PPPs include: (a) a gateway process governing the preparation and procurement of PPP projects with a strong role of the Ministry of Finance, (b) a proactive fiscal risk management function for PPPs in the Ministry of Finance, (c) budgeting, accounting, and reporting standards and practices that ensure fiscal transparency regarding PPPs, and (d) an enabling legal framework that is clear and consistent.[g]

[a] IMF (2018). How to Control the Fiscal Costs of Public-Private Partnerships? Washington DC.
[b] Irwin, T. and Mokdad, T. (2010). Managing Contingent Liabilities in Public-Private Partnerships. World Bank, Washington DC.
[c] Irwin, T. and Mokdad, T. (2010). Managing Contingent Liabilities in Public-Private Partnerships. World Bank, Washington DC.
[d] Irwin, T. and Mokdad, T. (2010). Managing Contingent Liabilities in Public-Private Partnerships. World Bank, Washington DC.
[e] IMF (2018). How to Control the Fiscal Costs of Public-Private Partnerships? Washington DC.
[f] Australian Capital Territory (2016). Guidelines for Public Private Partnerships. Government of Australia, Canberra.
[g] IMF and World Bank Group (2016). Public-Private Partnerships Fiscal Risk Assessment Model User Guide. Washington DC.

2.5. Policy recommendations to close infrastructure financing gaps

Official sources will not be sufficient to finance the infrastructure investment required to meet Rwanda's development goals. The government's fiscal space is largely depleted. Continued reliance on borrowing to increase infrastructure investment would undermine debt sustainability. Grants are likely to continue to decline as donors face supply constraints and Rwanda's income rises. And large increases in taxation and service fee collection could impair growth and reduce household welfare.

This section proposes measures to promote private sector financing of infrastructure, focusing on i) macroeconomic stability, ii) the institutional and regulatory framework for PPIs, iii) mobilization of domestic private sector financing, and iv) promoting a pro-poor infrastructure investment portfolio.

Maintaining macroeconomic and fiscal sustainability to preserve country risk

Maintaining public debt at sustainable levels is key to reducing the country's vulnerability to external shocks and liquidity pressures and their spillover effects on PPI. Rwanda's subprime status and rising risk of debt distress reduce the appetite of international investors, so credit enhancement will be required to attract private investment. While expansionary policies are necessary to mitigate the impact of the pandemic, steps to achieve a sustainable level of debt should be undertaken as soon as they are feasible. These measures would include increased revenues (through unwinding the tax measures undertaken to mitigate the impact of the crisis and continuing with the development of a medium-term revenue strategy, including a VAT gap analysis) and improved control of both current and capital expenditures. Unexpected fiscal costs to cover SOE losses underline the need to foster SOE debt transparency and strengthen fiscal risk assessment and management strategies of SOEs.

Further efforts to boost efficiency in public investment are key to fostering growth and achieving long term fiscal sustainability in Rwanda. The ongoing Public Expenditure Review (PER) that the World Bank and the government are conducting will be the appropriate platform to formulate a holistic approach to identifying the most development-friendly path to achieving sustainability. Key elements for physical investment include the evaluation of ways to streamline and rationalize the pipeline of investment projects, set criteria for prioritization, and identify sources of savings.

Rwanda should continue to rationalize the use of public funding for commercially viable projects. Monetizing existing public infrastructure assets could be a source of funding for new infrastructure projects. The first step would be to identify existing public assets that could be offered for private sector participation, for example by selling ownership shares. Rwanda should also allocate its limited concessional resources to projects or sectors that are not commercially viable but that yield large social and economic benefits.

Improving the quality of institutions to reduce uncertainty and promote private sector participation and PPPs

1. *Sound regulatory framework to attract, maintain, and secure PPPs, while ensuring the optimal contribution to the country development*

Rwanda has made impressive progress in strengthening the institutional and regulatory framework for PPPs. Further efforts would capitalize on this accomplishment by:

- *Improving competition in PPP contracting.* The criteria outlined in the PPP Law for initiation of a PPP project via an unsolicited proposal could be narrowed (limiting USPs to "monopoly services" does not eliminate most sectors where PPPs are used), to encourage competitive tender processes. to the extent feasible, projects initiated as unsolicited proposals should be subject to competitive procurement. The current practice of relying on review by the contracting authority and the Steering Committee to ensure the feasibility of projects submitted through USPs

may not be sufficient to ensure good value for money. Detailed guidance should be provided to ensure transparency in the procurement process.

- *Strengthening the management of PPPs.* Further standardization and uniformity in analysis, procurement, structuring, and implementation would improve PPP projects. Practices for PPP contract management could be enhanced. Linkages between the public investment management (PIM) and PPP frameworks need to be developed, where the PPPs could benefit from consistent and systematic processes to identify, prioritize and structure sector investments, as in the PIM framework. Projects considered for PPP suitability by the Steering Committee established in the PPP law already should have been considered by the Public Investment Committee, while the latter should involve the Steering Committee in reviewing proposed projects.
- *Strengthening the control of government fiscal commitments and contingent liabilities (FCCL) in PPPs.* Detailed guidance (through amendment to the PPP Law if possible, or if not through revised PPP Guidelines) on the institutional responsibilities and processes for the assessment and management of financial commitments to PPPs should be provided to improve the assessment of fiscal impacts and the monitoring and management of fiscal risks. The World Bank and IMF have tools and technical guidance for this purpose that are ready for Rwanda to adopt. The impact of PPPs on the budget (for example improvements in electricity supply or in the provision of housing could reduce the need for fiscal transfers) could be evaluated and user charge increases in affected sectors considered to mitigate the fiscal impact.
- *Improving the design of PPP contracts.* The circumstances under which contracts could be renegotiated should be defined, perhaps by introducing a third-party approval requirement for modifications (done by 47 percent of economies surveyed by the World Bank) or through the establishment of thresholds for modifications above which a new tendering process is required (40 percent of surveyed economies).
- *Strengthening engagement with stakeholders.* Efforts should include developing a communications plan to educate the public sector and civil society on the potential benefits of PPPs, communicating the government's objectives and plans, and explaining the role of the PPP Law in procurement (particularly sensitizing the private sector to competitive procurement processes, which are a departure from the previous use of USPs and direct regulation). Improving disclosure and developing a web-based project information database would increase visibility of the successes so far, improve the transparency and accountability of the PPP process, and improve investor and user confidence.
- *Building capacity.* Building the PPP capacity of staff from key government institutions, including the RDB, MINECOFIN, line ministries and contracting agencies, is essential. Training in project identification, preparation, procurement, contract management and good practices in other jurisdictions can be backed by completion of the internationally recognized CP3P certification program and complemented by the exposure of key government staff in actual projects.

A robust, multisector PPP project pipeline is needed, based on the identification and assessment of long-term service needs and economic viability. The transport, water and sanitation, waste management, irrigation, and housing sectors can be immediate focus areas for PPPs, given clearly identified service needs in these sectors. The logistics sector could be another area where PPPs can offer value for money. A small number of flagship projects could lead the way in testing and strengthening the institutional and regulatory framework while building capacity through learning-by-doing. Funding to meet the high cost of project preparation could be obtained from multilateral and bilateral agencies and global project financing

facilities. Further analysis will be required to identify the type of private financing and instruments that would be ideal for Rwanda, especially at sector and transaction level. Diversifying from debt-financed project financing, the preponderant financing mode for PPI in Rwanda, perhaps including more private equity and innovative financing instruments (such as green bonds and green finance) could be useful.

2. Strengthen the regulatory framework to enable pure private investments

More efforts are needed to mobilize private capital beyond PPPs. Private participation in infrastructure can take many other forms, some of which Rwanda has already explored. Notably, Rwandatel was privatized in 2005 and again in 2007 following deregulation of the telecommunications industry in the 1990s. Pure private provision of infrastructure is possible when there is competition among providers or effective regulation of any monopolies. Private investors would often take more risk than under a PPP, and this can lessen the need for government fiscal commitments. Starting early to strengthen the regulatory framework, and restructuring and deregulating industries where necessary, so that pure private provision is possible could pay Rwanda good dividends. Electricity generation and social housing are potential candidates.

3. Improvements in the policy framework for FDI

Efforts to promote FDI could be strengthened. The targeted promotion of FDI through deal accelerator initiative and investment marketing should be continued, selecting some of the priority sectors by phases. Investor outreach efforts could be expanded. The investor relationship management system recently deployed within the investment group of RDB could be used to compile all challenges reported by potential investors, to help identify systemic issues. Given their costs, Government/RDB should include provisions to review the effectiveness of discretionary incentives on a regular basis. Efforts at promotion, and the efficiency of investment, would be assisted by undertaking regulatory impact assessments and consultations on new regulations, to avoid any unnecessary negative impact on a large number of investors.

Rwanda's efforts to resolve investor disputes have improved, although closer monitoring of projects could help to avoid disputes. Some issues or termination of contracts (including PPPs) arise from the delays or poor performance by the developers. For example, there have been breaches of some renewable energy contracts related to delays by developers in commissioning their plants, imposing additional costs on the public sector agency involved. Careful monitoring of progress in projects is essential to identify problems as they emerge, so that developers can resolve them before they become full-blown disputes.

4. Improvement of SOE governance

Getting SOEs back on a financially sustainable path is the first step to mobilize private capital. Creditworthy SOEs can access commercial loans or bond markets on the basis of their own balance sheet, although given the difficult macroeconomic environment, some form of credit enhancement may be necessary (see the CI-Energies example in Box 2.4). Commercial debt on the balance sheet of SOEs would also likely be consolidated with the debt of the government in sustainability analyses, which would not help the government overcome its fiscal constraints.

Mobilization of domestic private sector financing, including long-term finance

Deepening access to long-term finance. Rwanda's local project finance market is small. Efforts to increase the universe of investors in PPPs could include easing unnecessary regulatory hurdles hindering local currency infrastructure financing by banks, revising the RSSB Law and/or Investment Policy to allow investment in infrastructure, and designing innovative financing mechanisms that can crowd-in domestic and regional funds and other investors (e.g., further issuances of infrastructure bonds, the government taking a more active

Box 2.4: CI-Energies – Refinancing operation to pave the way for private sector investment

The State-owned enterprise CI-Energies is the single buyer of electricity in Cote d'Ivoire. Following external shocks in the 2014 - 2016, the appreciation of the US dollar vs. the local currency XOF, and the increase in oil price, CI-Energies had fallen behind on its payments to independent power producers (IPPs) and gas suppliers.

The World Bank worked with CI-Energies and the Government of Cote d'Ivoire to place the electricity sector on a financially sustainable path. Once the Bank team was confident the electricity sector was on track, IDA supported CI-Energies with a EUR 180 million guarantee (US$198 million) to raise EUR 300 million (US$330 million) from a commercial bank at competitive terms. CI-Energies also raised in parallel the equivalent of US$160 million in local currency. This long-term financing coupled with strong support from the government—but no sovereign guarantee—was successful in restoring trust in the long-term financial sustainability in the energy sector in Cote d'Ivoire. The World Bank-supported refinancing operation closed in May 2019.

In July 2019, IFC successfully arranged a US$290 million debt package for the much-needed US$365 million expansion of the Azito IPP in Cote d'Ivoire, which will add 253 MW of power generation capacity. This expansion had been in preparation for years but was stuck because of the arrears situation in the sector. MIGA also provided its Breach of Contract cover for one of the sponsors (Globeleq).

yet minor role in project finance). It also will be important for the government, and RDB especially, to coordinate closely with the MDBs and DFIs, who have played important roles in financing Rwandan PPP projects.

Risk sharing facilities could unlock financing from the local banking sector. Local commercial banks may not be equipped to adequately evaluate the risks associated with private projects and, therefore, may not be comfortable lending to such projects. Risk sharing facilities that absorb a percentage of the losses on loans made to private projects could be provided by MDBs such as IDA on a funded basis (a loan is disbursed and set aside as collateral for the local commercial banks) or on an unfunded basis (a guarantee is provided by the MDB to the benefit of local banks or through a local financial intermediary such as the Banque Rwandaise de Développement). The latter structure wouldn't result in any increase in direct liabilities. Partial risk sharing facilities have been successfully implemented in India in the energy efficiency sector (Box 2.5), and a facility is being prepared in Cote d'Ivoire to finance the renewal of a fleet of trucks by local commercial banks.

Box 2.5: India – Partial risk sharing facility

To unlock financing for the Energy Services Companies (ESCO) market in India, the World Bank designed the Partial Risk Sharing Facility (PRSF) for Energy Efficiency Project in 2015 in collaboration with India's Bureau of Energy Efficiency (BEE) and other partners. The PRSF applies the World Bank's global experience, lessons learned, and best practices to demonstrate innovative financing and implementation mechanisms that can tap into the significant private sector potential in India. The PRSF Facility of US$37 million (provided by CTF and GEF), managed by the Small Industrial Development Bank of India (SIDBI), provides partial credit guarantees to sub-projects implemented by ESCOs.

PRSF sub-projects range from energy-efficient variable speed drives in industries to sustainable cooling systems in buildings and LED streetlights in cities—which together cut 95,000 tons of CO2 emissions annually. PRSF has demonstrated the de-risking and leverage effect of a guarantee instrument by mobilizing private capital over 3.35 times.

It has also paved the way for commercial banks to take a more serious look at ESCOs as borrowers by building the capacity of ESCOs and banks, and standardizing tools and templates through technical assistance to achieve ESCO market transformation at scale. By demonstrating that energy efficiency projects with ESCO participation can be successful, PRSF has provided a critical piece of India's energy efficiency market puzzle.

Promoting a pro-poor infrastructure development strategy

Rwanda needs to rebalance its current investment model to address the declining trend of the growth elasticity of poverty in recent years. The country will need to rebalance its investment strategy from prioritizing large strategic capital-intensive projects toward projects critical for broad-based social returns. Our estimates show that if Rwanda were to comply with the Malabo agreement, and allocate 10 percent of the future infrastructure investment to agriculture, allied activities and rural infrastructure, then rural households would experience substantial gains, leading to a decline in inequality and poverty.

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ANNEXES

ANNEX I: GDP SECTORAL GROWTH

(percent)

Activity description	2019				2020				2021
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Gross domestic product	6.2	12.3	10.9	8.4	3.7	-12.4	-3.6	-0.6	3.5
Agriculture	4.0	5.0	7.0	4.0	-1.0	-2.0	2.0	3.0	7.0
Food crops	4.0	4.0	4.0	4.0	-2.0	-2.0	3.0	3.0	7.0
Export crops	-7.0	8.0	23.0	-4.0	-16.0	-19.0	-8.0	0.0	7.0
Livestock & livestock products	12.0	11.0	11.0	11.0	8.0	8.0	8.0	9.0	9.0
Forestry	5.0	6.0	6.0	5.0	4.0	3.0	4.0	4.0	5.0
Fishing	2.0	3.0	4.0	5.0	5.0	-48.0	-20.0	1.0	1.0
Industry	15.0	21.0	16.0	14.0	2.0	-19.0	-1.0	2.0	10.0
Mining & quarrying	16.0	15.0	-13.0	-12.0	-26.0	-53.0	-24.0	-19.0	3.0
Manufacturing	7.0	16.0	13.0	9.0	6.0	-13.0	6.0	10.0	8.0
Electricity	8.0	9.0	6.0	6.0	4.0	-6.0	2.0	8.0	2.0
Water & waste management	3.0	3.0	2.0	1.0	2.0	1.0	3.0	3.0	3.0
Construction	28.0	37.0	34.0	33.0	5.0	-20.0	-6.0	-2.0	14.0
Services	4.0	11.0	10.0	8.0	6.0	-16.0	-7.0	-3.0	0.0
Trade & transport	6.0	18.0	19.0	13.0	7.0	-29.0	-12.0	-7.0	-4.0
Maintenance & repair of motor vehicles	6.0	6.0	7.0	9.0	1.0	-43.0	14.0	15.0	29.0
Wholesale & retail trade	5.0	24.0	21.0	14.0	11.0	-22.0	0.0	-2.0	0.0
Transport	8.0	11.0	18.0	12.0	0.0	-41.0	-33.0	-19.0	-14.0
Other services	3.0	8.0	7.0	5.0	5.0	-11.0	-5.0	-2.0	1.0
Hotels & restaurants	7.0	9.0	11.0	12.0	3.0	-62.0	-55.0	-44.0	-34.0
Information & communication	2.0	9.0	-1.0	25.0	34.0	33.0	43.0	12.0	18.0
Financial services	6.0	10.0	5.0	13.0	-5.0	-8.0	-3.0	6.0	10.0
Real estate activities	4.0	10.0	2.0	0.0	0.0	-7.0	1.0	8.0	3.0
Professional, scientific & technical activities	11.0	13.0	6.0	9.0	-1.0	-6.0	2.0	1.0	10.0
Administrative & support service activities	2.0	3.0	6.0	7.0	1.0	-8.0	-9.0	-11.0	-4.0
Public administration & defense; compulsory social security	-3.0	9.0	12.0	1.0	14.0	-3.0	1.0	0.0	-2.0
Education	2.0	2.0	2.0	2.0	-3.0	-67.0	-57.0	-23.0	5.0
Human health & social work activities	-4.0	5.0	14.0	-1.0	32.0	5.0	6.0	24.0	-12.0
Cultural, domestic & other services	8.0	9.0	10.0	5.0	-1.0	-4.0	1.0	-2.0	6.0
Taxes less subsidies on products	9.0	24.0	16.0	12.0	9.0	-9.0	-4.0	-2.0	3.0

Source: NISR

ANNEX II: ESTIMATES OF DETERMINANTS OF PRIVATE PARTICIPATION IN INFRASTRUCTURE

Understanding the drivers of PPI financing is important for determining the appropriate policy actions to take in order to attract PPI, as well as to ensure the cost-benefits matrix of PPI are maximized. Global evidence suggests that there are broadly two sets of drivers of private infrastructure finance: First are push factors, which relate to the characteristics in countries where financing originates, that pushes capital towards countries with scarce capital resources, e.g. motivated by global return on capital/interest rates. Second are pull factors, which are characteristics of the host country that attracts capital flows, e.g. resource endowment, large market size, macroeconomic stability, financial and trade openness, and good quality institutions, amongst others.

An IFC (2021) assessment, based on Sub Saharan Africa cross-country data, suggests that most of the push and pull factors are relevant for PPI inflows, but less strong compared to FDI inflows. Using panel data for 38 Sub-Saharan African countries, including Rwanda, the IFC study shows that high global interest rates are associated with reduced PPI flows to SSA (Box A1), while market size, macroeconomic stability, trade openness, and good quality institutions are associated with increased inflow of PPI into SSA. The institutions that seem to matter most are those that tackle corruption, promote political stability, improve the quality of the regulatory environment and effectiveness of the government.

IFC's assessment shows that, out of all the drivers of PPI, institutions have the strongest impact on PPI. They have much large coefficients than other variables (see Table in Box A1). We also analyzed the correlation of governance indicators in a sample of Rwanda and selected structural and aspirational comparators within the Sub-Saharan African region. The structural comparators are low-income countries,[48] with GDP per capita very close to that of Rwanda. They include Burkina Faso, Malawi, Mali and Uganda. The aspirational comparators are lower middle-income countries (LMICs), with higher per capita GDP than Rwanda, including Benin, Cameroon, Senegal, Zambia, and Zimbabwe. The correlation analysis underscores a strong positive correlation between good institutional quality and PPI for five out of the six proxies of governance.

Box A1: Institutions can play a key role in attracting private financing

We analyzed the determinants of private participation/investment in infrastructure (PPI) in a panel of 38 SSA countries, over the period 2008-2020. The data was sourced from the IJ Global and the World Bank's PPI Databases. These databases provide information on the share of private sector investment in each infrastructure transaction, and we used this share to compute PPI. We then ran six two-stage least squares truncated regressions where PPI as a percent of GDP was used as the dependent variable, and the various push and pull factors identified in the capital/financial flows (see text discussion) were used as the independent variables. The results showed the presence of time and country effects with Rwanda's intercepts being below average, suggesting that with holding other factors constant, Rwanda's PPI receipt has been below the average for the region. This is consistent with the overall flow data because PPI in SSA has been driven by South Africa (25.1 percent of total), Nigeria (19.3 percent), Mozambique (16.5), Ghana (8.1), Angola (6.3 percent), and Kenya (3.5 percent).

[48] Note that LICs have a GDP per capita (based on Atlas method) below US$1,035, and lower middle-income countries (LMICs) have GDP per capita (Atlas method) of between US$1,036 and US$4,045.

Box A1: Institutions can play a key role in attracting private financing *(contd.)*

Overall, the results confirm the importance of both push and pull factors in explaining PPI inflow into SSA, including global financing conditions, size of the market (GDP), macroeconomic stability (inflation), and trade openness. Public debt appears to provide a complement to PPI, but if it is too high (in this case above 60 percent of GDP), it becomes a deterrent to PPI. The results suggest that the quality of institutions, as reflected in their ability to control corruption, enhance government effectiveness, political stability, quality regulations, rule of law and accountability have a stronger impact of drawing capital inflows than any other pull factors.

Box Table: Drivers of PPI: Two Stage Truncated Model

First Stage Regressions	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Dependent Variables: Governance Variables											
	Control of Corruption	Government Effectiveness	Political Stability	Quality of Regulatory	Rule of Law	Government Accountability	Control of Corruption	Government Effectiveness	Political Stability	Quality of Regulatory	Rule of Law	Government Accountability
Colonial Origin	-0.795***	-0.867***	-1.551***	-1.549***	-1.028***	-1.657***	-0.795***	-0.867***	-1.551***	-1.549***	-1.028***	-1.657***
	(0.0174)	(0.0380)	(0.0132)	(0.443)	(0.0219)	(0.0213)	(0.0174)	(0.0380)	e(0.0132)	(0.443)	(0.0219)	(0.0213)
R-Squared	0.9669	0.9688	0.9695	0.9622	0.963	0.968	0.9669	0.9688	0.9695	0.9622	0.963	0.968
Second Stage Regressions	Dependend Variable: Total PPI (% of GDP): Truncated Regression with robust Standard Error											
US real lending rates	-0.103***	-0.0945***	-0.0594*	-0.0554*	-0.159***	-0.251***	-0.124***	-0.117***	-0.0805**	-0.0771*	-0.189***	-0.307***
	(0.0316)	(0.0289)	(0.0329)	(0.0331)	(0.0469)	(0.0847)	(0.0388)	(0.0373)	(0.0393)	(0.0394)	(0.0530)	(0.0914)
GDP (US$bn constant 2010)	0.000966***	0.000379	0.00125***	0.00119***	0.000423**	0.000306*	0.000958***	0.000391	0.00121***	0.00116***	0.000443**	0.000313*
	(0.000330)	(0.000283)	(0.000402)	(0.000387)	(0.000182)	(0.000178)	(0.000304)	(0.000273)	(0.000374)	(0.000359)	(0.000189)	(0.000187)
Consumer Price Inflation	-0.000499**	-0.000292	-0.00143**	-0.00153**	-0.000686*	-0.000451*	-0.000584**	-0.000381	-0.00145**	-0.00155**	-0.000846**	-0.000650**
	(0.000252)	(0.000237)	(0.000615)	(0.000654)	(0.000354)	(0.000253)	(0.000275)	(0.000250)	(0.000607)	(0.000643)	(0.000372)	(0.000287)
Trade Openness	0.0662	0.0527	0.0458	0.0545	0.0637	-0.0428	0.0629	0.0489	0.0429	0.0512	0.0653	-0.0544
	(0.0542)	(0.0556)	(0.0479)	(0.0500)	(0.0560)	(0.0512)	(0.0525)	(0.0541)	(0.0470)	(0.0490)	(0.0538)	(0.0492)
Debt (% of GDP)	0.00134*	0.00113*	0.00133*	0.00133*	0.00122*	0.00112	0.00203**	0.00184**	0.00193***	0.00196***	0.00206**	0.00199**
	(0.000697)	(0.000651)	(0.000681)	(0.000685)	(0.000712)	(0.000709)	(0.000788)	(0.000755)	(0.000747)	(0.000756)	(0.000831)	(0.000824)
Dummy for Debt > 60%							-0.0621*	-0.0638*	-0.0555	-0.0569*	-0.0730*	-0.0745*
							(0.0355)	(0.0356)	(0.0339)	(0.0342)	(0.0383)	(0.0388)
Dummy for Resource rich	-0.0887**	0.114**	0.0766**	0.0799**	-0.0709*	0.300**	-0.0838**	0.109**	0.0746**	0.0779**	-0.0749**	0.353**
	(0.0410)	(0.0543)	(0.0304)	(0.0314)	(0.0392)	(0.143)	(0.0370)	(0.0518)	(0.0296)	(0.0306)	(0.0360)	(0.141)
Control of Corruption	0.863**						0.832**					
	(0.356)						(0.332)					
Government Effectiveness		0.408*						0.383*				
		(0.222)						(0.209)				
Political Stability			0.772**						0.732**			
			(0.309)						(0.292)			
Quality of Regulation				0.823**						0.782**		
				(0.330)						(0.311)		
Rule of Law					0.535**						0.568**	
					(0.254)						(0.239)	
Government Accountability						0.630**						0.744**
						(0.309)						(0.305)
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.648***	0.372***	0.402***	0.411***	0.627***	0.414***	0.666***	0.395***	0.421***	0.430***	0.695***	0.500***
	(0.207)	(0.139)	(0.115)	(0.118)	(0.227)	(0.135)	(0.195)	(0.141)	(0.115)	(0.118)	(0.220)	(0.146)
Rwanda intercept	-0.906**	-0.217*	-0.287**	-0.306**	-0.238**	0.933**	-0.877**	-0.207*	-0.275**	-0.294**	-0.258**	1.096**
	(0.379)	(0.123)	(0.121)	(0.129)	(0.120)	(0.451)	(0.354)	(0.116)	(0.115)	(0.122)	(0.113)	(0.443)
Sigma	0.0612***	0.0631***	0.0604***	0.0605***	0.0634***	0.0641***	0.0601***	0.0619***	0.0595***	0.0596***	0.0619***	0.0626***
	(0.0130)	(0.0139)	(0.0125)	(0.0126)	(0.0142)	(0.0146)	(0.0127)	(0.0136)	(0.0123)	(0.0123)	(0.0138)	(0.0141)
Number of Observations	102	102	102	102	102	102	102	102	102	102	102	102

Source: Authors' own calculations based on WBG WGI, IJ Global and WBG PPI Databases.

ANNEX III: COMPARING THE EFFICIENCY OF INVESTMENT ACROSS COUNTRIES

Limited fiscal space means that countries should put more emphasis in optimizing the use of limited resources.

The efficiency of capital

The efficiency and quality of public investments matter for economic growth. Efficient investment can narrow the gap between poorer and wealthier countries. Both empirical and theoretical literature have tried to identify the contribution of additional infrastructure capital to productivity and output. Empirical research finds that output elasticities range from 0.06 to 0.18 (Calderón, Moral-Benito and Servén, 2011) in developing countries. There is a recognition that different investments have different impact on growth (Calderon, 2009) and that investment efficiency may vary across countries. For example, the effect of public investment tends to be overstated in many low-income countries with poor institutions (Keefer and Knack 2007) due to weakness in public investment management.

Inefficient investment implies leakages such that every $1 spent on infrastructure becomes costly from a public finance perspective because only a partial amount of the $1 goes to the actual investment. Examples include road infrastructure investments – a $1 efficient road may last ten years, compared to a $1 inefficient road that may last only five years. Although the short-term GDP impact of investments can be quantitatively the same for efficient and inefficient countries, there is little argument about the benefits of improving efficiency from both an economic and welfare perspective (see Berg et al., 2015 for a deeper discussion).

Similar to other WB and IMF studies, this study relies on an efficiency index derived from Data Envelopment Analysis (see for example, IMF (2015) and Herrera and Ouedraogo (2018)). The methodology maps infrastructure quantity (e.g. hospital beds, access to water and telephones) to investment values. The efficiency estimate is equal to 1 for very efficient countries and 0 for the least efficient countries. Efficiency inputs are values of investments, while the outputs are the infrastructure quantities. The index computes the relative returns (or outputs) for each $1 of investment. Several infrastructure quantity indicators are used to compute the index, including data on the number of hospital beds, broad band subscriptions, access to drinking water, logistics performance and port infrastructure.

A challenge is that there are data gaps in between years for many Sub-Saharan African countries. The efficiency index is therefore generated using principle components to deal with missing data. It is computed using a large set of developing and developed countries to weed out biases – as an example if the efficiency index is based on a sample of regional (as opposed to global) countries then the most efficient country in the region will have a score of 1 and hence lead to no leakage.[49] However, for some of the simulations on improving efficiency, we rank SSA countries to generate economic responses when countries reach the SSA frontier.

MFMod allows for efficiency-adjusted impact on growth of capital accumulation. The paper will apply data envelopment analysis (DEA) to compute the efficiency/quality of public sector capital for Africa. Costs of additional investment to close the infrastructure gap data are taken as is. Data already assumes costs consistent with average costs in each country. The cost measure includes the cost of inefficiency and corruption. The measure of efficiency proposed in this study will become a policy option for countries, as higher spending efficiency would reduce the cost of investment.

[49] An alternative measure of efficiency, which this study does not consider, is an estimate of efficiency of public investment processes (Dabla-Norris et al., 2012). This index is constructed by averaging qualitative data (e.g. World Bank Public Investment Management case studies, Public Expenditure and Financial Accountability (PEFA) assessments etc.) on project appraisals, selection, implementation and evaluation to infer the efficiency of processes.

Data Envelopment Analysis (DEA) is used to compute the efficiency/quality of public sector capital for Africa. It is assumed that the quality of various public goods is used as outputs, while capital is the input variable. The DEA model then computes efficiency of public capital in terms of the quality ranking of public goods and is estimated on all world countries to define a global quality frontier rather than only a regional one. Public capital stock data is obtained from the World Banks Macro Poverty Outlook, while the quality of public goods is sourced from both the World Economic Forum and the World Development Indicator databases. In particular, data is obtained for infrastructure quality, mortality due to road traffic (a proxy for the quality of roads), the number of hospital beds, safe drinking water access and broadband internet subscription.

The results of the efficiency scores are summarized in Figure 2.16. The list of advanced countries (England, USA and Germany) score relatively in terms of quality. For Sub-Saharan Africa, Namibia leads in terms of capital efficiency.

Measuring leakages

When investing in infrastructures, if a country spends $10, the resulting actual spending in the infrastructure itself might be less than the implied $10. Due to corruption or inadequate governance, a portion of the $10 might be leaked away due to bribes or poor execution of tasks. This leakage comes before the control of the quality of the infrastructure spending. If $2 are lost to corruption or poor execution of tasks, the remaining $8 being spent on the actual infrastructure might lead to different qualities, i.e. the productive capacity of the infrastructure (for instance, different robustness of roads).

Figures A3.1 and A3.2 summarize the corruption and governance indices. The figures compare 2000 against 2018 for Sub-Saharan African countries. The mean estimate for the region is summarized by the vertical red line for the respective years. In terms of corruption, many countries remained at their 2000 perceived score in 2018, except for Rwanda with positive score in 2018 compared to its large negative score in 2000. Eritrea and South Africa are the two countries that with the largest swing towards corruption. The scores for government effectiveness remained also constant, except for Rwanda that achieved a positive score in 2018 compared to a negative score in 2000.

Figure A3.1: Comparing corruption

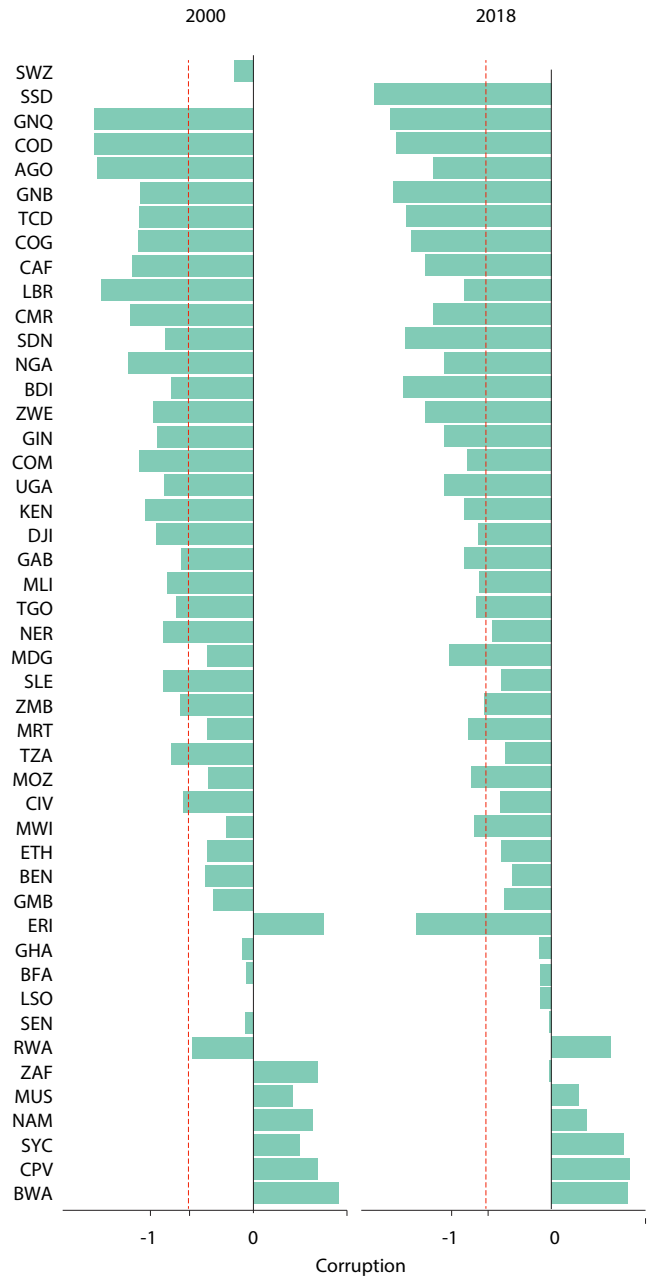
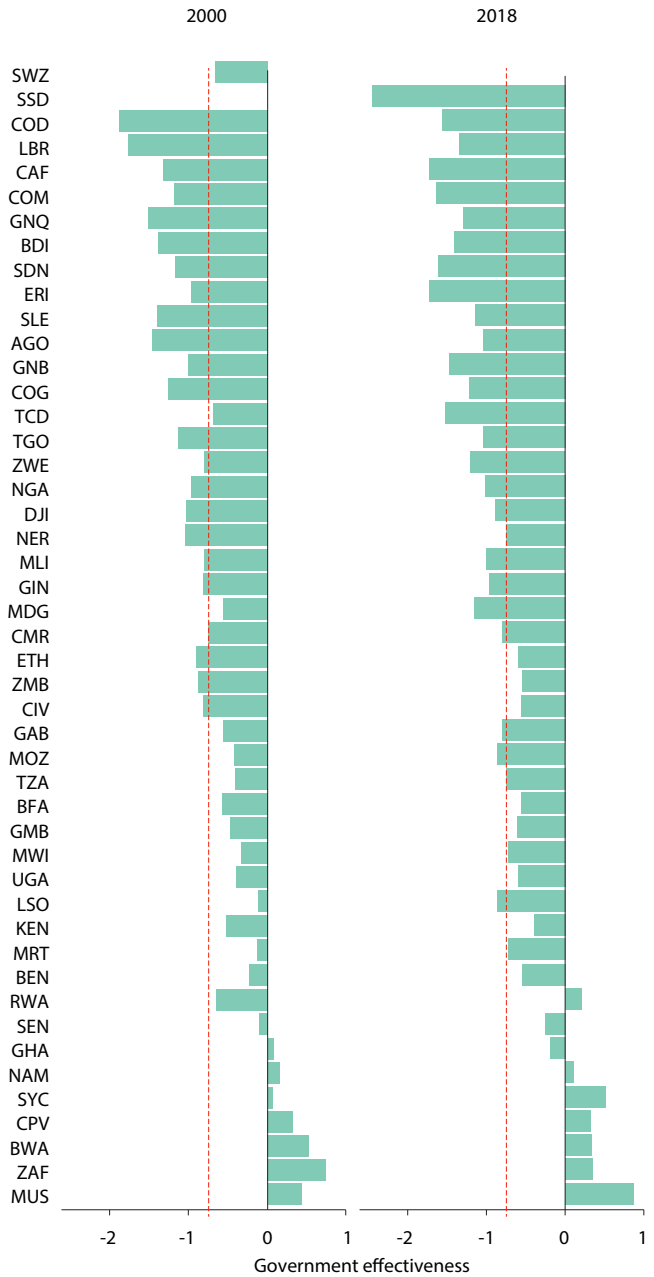


Figure A3.2: Comparing government effectiveness



Source: Kaufman et al. (2010) and own calculations

ANNEX IV: THE CGE MODEL

A CGE model is used to assess the impact of infrastructure investment and different modes of financing infrastructure on Rwanda's economy. CGE models are well-suited to assess the impact of infrastructure investment for the following reasons: (1) they are sufficiently flexible and detailed to deal with the wide variety of transmission channels (labor market, capital, FDI, trade, and productivity); (2) they rely on input-output tables and assume behavioral functions for agents (firms and households); (3) they offer a comprehensive evaluation of the effects of policies, capturing direct and indirect effects as well as second- and third-round effects; (4) they can capture the effects along several dimensions —including national accounts (GDP, consumption, and investment), the fiscal framework (government revenue, deficits, and debt), the external account (trade, FDI, and the current account), industries, factors of production, and households that would be most adversely affected by the shock; (5) they enable the introduction of positive externalities of infrastructure investments; and (6) they can capture the effects of a wide range of investment financing options, so as to identify trade-offs.

This study relies on an adapted version of the World Bank Mitigation, Adaptation and New Technologies Applied General Equilibrium (MANAGE) model, a single-country recursive dynamic computable general equilibrium (CGE) model that explicitly models the year-by-year effects of a particular policy or shock on the economy. In addition to the standard features of a single country CGE model, the MANAGE model includes a detailed energy specification that allows for capital/labor/energy substitution in production, intra-fuel energy substitution across all demand agents, and a multi-output, multi-input production structure. The specificities of the MANAGE model are described in detail in Van der Mensbrughe (2017).

The MANAGE model for Rwanda was extended for the analysis of the economic effects of infrastructure investment. The model is calibrated to the social accounting matrix (SAM) for the year 2017 (IFPRI, 2020). The SAM includes transaction flows for 74 sectors, 78 commodities, and 3 types of factors of production: labor, land, and capital. There are 8 labor categories distinguished by education level (primary, secondary, or tertiary education, or none) and rural-urban divide, supporting the analysis of differences across unskilled and semi-skilled/skilled labor. Production is modelled using a nested CES structure. Labor supply is a function of real wages for each category of labor, and we assume partially flexible wages and labor supply. There are 15 household categories distinguished by income/consumption decile for the urban, rural farm and rural non-farm sectors. Other institutions include enterprises, the government, and the rest of the world. There are several tax/subsidy accounts, including import tariffs, indirect taxes as well as direct income taxes.

Investment is distinguished between public and private, and between infrastructure and other investments. Infrastructure investment is distinguished from other types of investments in the model as it can have positive externalities. It is a policy variable, which is exogenously determined and therefore does not vary with total savings. Private investment, other than infrastructure, is driven by savings from domestic and foreign sources. The model also comprises a simplified debt module expanding further the fiscal analysis to capture effects on government domestic and foreign debt, borrowing on the domestic and international markets, and debt service obligations. The model is run for 24 periods, from 2017 to 2040.

Macro fiscal closures are such that the government budget balance closure determines government savings. We adopt an endogenous budget balance and fixed tax rates. Government consumption and investment are fixed in real terms as a share of base year GDP and calibrated in the baseline to reflect past performance and projections. Any surplus is used to pay off debt, and any deficit is funded by debt. The level of investment in the economy is determined through a savings-driven closure with exogenous propensity to save for households and firms. We assume exogenous foreign savings in foreign currency calibrated to match historical data and projections. The nominal exchange rate is fixed. The real exchange rate adjusts to maintain the current account balance.

The drivers of growth in this model are key to understanding the growth effects of infrastructure investment. The level of GDP in this analytical framework depends on three factors: i) the supply of workers, ii) investment, and iii) productivity. Infrastructure investment is distinguished from other types of investments in the model. It is our policy variable and therefore exogenously determined. We adopt a deficit neutral financing of infrastructure investment, that is, the level of the government deficit remains the same as in the baseline each year. Private investment, other than infrastructure, is driven by savings from foreign and domestic sources, where government savings is exogenous. Labor supply is affected by labor demand as economic activity picks up due to infrastructure investment. Productivity is a transmission channel of infrastructure investment scenario via positive externalities. Household welfare, measured by household consumption in real terms, is boosted by increases in employment and wages that raise income. However, infrastructure investment, by creating demand for investment goods, also results in higher prices, which tend to reduce welfare.

Infrastructure investment creates demand for investment goods, and contributes to the efficiency of the targeted sectors and the economy in general. Our approach assumes that infrastructure has a positive externality. We increase economywide TFP based on an estimation by Iimi et al., 2015. Furthermore, higher investment increases productivity in the targeted sectors, in this case transport, energy, ICT, and water. The scope of the sectoral productivity gain is calibrated based on several factors, including past expenditure in the sector, average annual growth of sectoral GDP over the past 10 years, and the share of the sector in new infrastructure investment. Sectoral productivity is a function of the ratio of new level of public infrastructure investment to the level in the baseline scenario, with a sector-specific elasticity. These parameters are drawn from estimations by Calderón and Servén, 2008; Calderón, 2009; Calderón et al., 2018; Iimi et al. 2015; Pedro and Lighart, 2015.

ANNEX V: CASE STUDIES OF PRIVATE SECTOR INFRASTRUCTURE INVESTMENT IN KEY SECTORS

Energy: a Rwanda success story

The power sector has made good progress in attracting private investment, but financing challenges remain. Over the period 2008-20, Rwanda attracted US$396 million in private investment into the energy/electricity sector. In per capita terms, private investment into power in Rwanda was greater in all comparator countries except Senegal and Zambia (Figure 2.9). However, the sector's total investment financing of 0.6 percent of GDP between 2017 and 2019 was less than both Government's medium-term plans (1.59 percent of GDP) and what is required to sustain an annual growth rate of 6.5 percent (2.47 percent of GDP).

The increase in investment in power has been associated with positive outcomes. Rwanda's generation capacity has tripled in the last decade.[50] Power outages have declined substantially, both in terms of length and frequency, thus reducing their economic, social, and human impact. Access to electricity increased from 10 percent in 2009 to over 50 percent in 2020. Moreover, Rwanda has tilted its electricity mix towards cleaner sources. The share of oil-generated electricity in power generation fell from about 45 percent in 2013 to less than 20 percent in 2018. Oil has been replaced by cleaner lake methane-based power, and to a smaller extent by solar power and peat fueled power.[51]

Progress in the power sector has been largely driven by governance reforms. Reforms were undertaken to enhance the governance of the state-owned electricity company, particularly its transparency, operational efficiency, and management accountability. In addition, Rwanda restructured the key power sector institutions to enhance accountability, streamline operations, and create a credible off-taker for electricity supplied by the private sector. These reforms have provided a foundation for further power sector reforms, and they offer a model from which other sectors can learn, in order to attract more private investments in infrastructure.

However, the cost of power remains very high. The cost of electricity supply is among the highest in the region, and is a constraint on business operations and to overall industrial and economic development. The cost of electricity remains beyond the reach of most retail consumers.

Moreover, high costs, low uptake of electricity and operational issues are weighing on the financial sustainability of the sector, and creating fiscal risks. The Government has had to bridge the gap between the sector cost and revenues. The baseline fiscal transfers to sustain the sector's operations were estimated at above 1.0 percent of GDP in 2019, and projected to exceed 4.0 percent of GDP by 2023. To minimize the fiscal risks, the Government has been implementing reforms on operational efficiency, affordability, and accountability of electricity service. Several policy actions were suggested in the World Bank's 2019 Economic Update to tackle the current power sector challenges. Some of these include integrating least-cost sector planning in the overall energy sector expansion plans, developing a Government driven PPP framework instead of relying on unsolicited bids, adjusting tariffs periodically, promoting regional electricity trade through bilateral contracts to tap lower cost supply sources and better integrate variable renewables, and accelerating operational reforms of the state electricity company.

[50] World Bank (2019). Lighting Rwanda. Economic Update, June 2019. Washington DC.

[51] Ibid.

Transport: Despite progress, costs remain high

Rwanda needs to invest a minimum of 1.36 percent of GDP per year in transport until 2040 to meet an annual growth rate of 6.5 percent.[52] Rwanda's own medium-term plan (which was jointly prepared with the support of the AfDB) with a broader coverage of sub-sectors suggests that the country needs a total investment of US$5.1 billion (7.7 percent of GDP per year) in the transport sector between 2019-24 to meet the sector's medium-term goals.[53] The 2017-2019 fiscal outturns show that government spending in the transport sector averaged 0.85 percent of GDP, suggesting an investment gap of 6.81 percent of GDP over the medium term, if public investment follows past trends.[54]

Rwanda needs an efficient transport system to address the constraints arising from being landlocked. It is not connected to regional railway networks, and thus trade is entirely dependent on air and road transport. Efficient transport systems and services would enhance competitiveness by reducing the cost and improving the speed of procuring imported inputs and moving exports.[55] For competitiveness, a holistic approach that integrates networks (roads, railway and air cargo) and services (fragmented trucking, inland container facilities, dedicated air freight providers) is needed.

Rwanda continues to face transport and logistical challenges along the trade corridors, as well as domestically. Transport systems along trading corridors remain characterized by inadequate availability and poor quality of road, rail, and water infrastructure networks, as well as associated terminal and handling facilities.[56] These, along with other investment climate issues, cause bottlenecks and delays along the trade value chain. Domestically, Rwanda is making headway in developing feeder roads, with the support of development partners. However, storage facilities are either inaccessible to farmers or are of poor quality, hampering agribusiness.

Transport sector reforms have improved speed, but costs remain exorbitant. The 2013 Northern Corridor Integration Projects, which link Burundi, Rwanda, and Uganda with Kenya's maritime port of Mombasa, had been expected to reduce both the time and cost of transport. Their main success has been reducing trading time between Mombasa and Kigali by 72 percent since 2013, mainly due to reforms relating to the Single Customs Territory clearance procedures.[57] However, despite declining by 28 percent since 2013, logistics costs remain high (around $3,633 per container from Mombasa to Kigali), making Rwanda one of the most expensive places for a container to reach.[58] Rwanda's transport costs account for 40 percent of imports/exports value, compared to 12 percent for Kenya and 36 percent for Uganda.

Financing challenges have been one of the factors behind slower progress in addressing transport and logistical issues. However, climate resilience, complex institutional arrangements, and capacity constraints (including human capital challenges) have also played important roles.[59]

Rwanda needs to cooperate and coordinate with its regional peers when developing transport systems for trade. The dependence on the Central and Northern trade corridors through Kenya, Uganda, and Tanzania means that Rwanda's efforts to improve logistics performance depend critically on

[52] Oxford Economics' Global Infrastructure Hub. https://outlook.gihub.org/countries/Rwanda.

[53] Oxford Economics estimates are focused on air and road transport only, Rwanda's own medium term plan is comprehensive and covered all subsectors of transport, including air, rail, road, water, pipeline, boarder post weigh bridge, and Urban Transport and Multi-Modal Facilities (See. African Development Bank, 2013). Rwanda Transport Sector Review and Action Plan. Tunis.

[54] Ministry of Finance (Year). Budget Execution by COFOG. Government of Rwanda.

[55] World Bank Group (2019). Transforming for the Jobs of Tomorrow. Country Private Sector Diagnostic. Washington DC.

[56] Ibid.

[57] Ibid.

[58] Vanguard Economics. 2017. Measuring the Social and Economic Impact of Northern Corridor Integration Projects (NCIP) on Rwanda. Vanguard Economics, Kigali.

[59] Ibid.

operations in bordering countries (including port, road, and systems). Efforts are underway to develop rail networks in the central corridor.

There is potential for PPPs and other private sector solutions across the key transport subsectors to help bridge the investment gap. A number of interventions can be employed to crowd in more private sector financing in the transport sector.[60] The starting point would be identifying and clearly defining those opportunities that can be tackled with private sector solutions. This can be followed by strengthening the PPP framework, public investment systems and building capacity to minimize the potential for fiscal illusions and fiscal risks. In addition, developing domestic financial markets and attracting retail financing would help private sector to mobilize financing.

Digital services: low coverage and high costs

The investment gap in digital services is large. Estimates by Oxford Economics suggest that Rwanda needs to invest an average of 4.3 percent of GDP per year in ICTs until 2040 to meet an annual growth rate of 6.5 percent.[61] Estimates by Rwanda's Ministry of ICTs in its medium-term plan suggest that the country would need a total investment of US$162 million (0.24 percent of GDP per year) in ICTs between 2019-24 to meet the country's medium-term digital sector goals.[62] Fiscal outturns for 2017-2019 suggest that government spending on the ICTs sector averaged 0.11 percent of GDP, suggesting an investment gap of 0.13 percent of GDP per year over the medium term.

Closing these investment gaps is critical, as digital services facilitate economic transformation and development, especially in a landlocked economy like Rwanda. For digital services to effectively support growth, some foundational elements need to be built, including digital skills and literacy, digital platforms, digital infrastructure, financial services, and entrepreneurship. This, in turn, is only possible when an enabling environment is created for a digital economy to thrive, and thus government commitment is key.

The Government of Rwanda has embraced and has been supporting the digital economy, through high public investments and other initiatives to enhance digital connectivity, expand digital literacy and create support infrastructure for tech-based start-ups. This commitment has achieved significant progress, including rolling out telecommunications infrastructure to 96 percent of the population, adoption of e-government delivery systems for provider management and citizen engagement, digital IDs, and training for digital literature by teachers in school and government officials.[63] Rwanda has achieved some of the highest 3G and 4G network coverage rates on the continent.

However, ICTs uptake remains low and costs remain high. Only 1 percent of households subscribe to high-speed internet, far below the regional average of 6 percent. This is partly due to low incomes, low computer and smartphone ownership, and erratic electricity supply. Costs of digital services are relatively high in Rwanda, in particular for fixed broadband, where Rwanda's high costs (relative to GNI) are ranked 170 out of 184 countries.[63] Rwanda is ranked 110 in mobile broadband handset-based prices, 149 in mobile broadband computer-based, and 158 in mobile cellular sub-basket. The cost of 4G/LTE services are reportedly high for wholesale customers and retail consumers, resulting in low uptake.

[60] https://outlook.gihub.org/countries/Rwanda.

[61] Ministry of ICTs. ICT Sector Strategic Plan (2018-2024): Towards digital enabled economy. Government of Rwanda.

[62] World Bank (2019). Lighting Rwanda. Economic Update, June 2019. Washington DC.

[63] ITU (2019).

Moreover, despite progress, a large basic literacy gap slows adoption of digital services by the wider population. Therefore, more investments in digital skills are required. This should be complimented by interventions that boost the perceived value of broadband and other e-services to bring more Rwandans online.[64] Investing in intermediate digital skills is also critical for formal sector employment. While Rwanda is piloting new schemes to boost skills, faster progress would be achieved through interventions and innovative partnerships, including those that crowd-in private sector solutions.

Scope for private sector solutions exists beyond skilling and training. Public investment in digital skills and public e-services should build a foundation, but the private sector will need to play a far greater role in spearheading digitization to sustain the growth momentum, through both increased technology adoption and support for innovation that can enhance productivity and create new off-farm jobs.[65] Digital services need to be permeated to the key economic sectors, including agriculture and e-commerce, and to SMEs. Rwanda needs to support its nascent digital entrepreneurship ecosystem by developing support services and stimulating local demand for digital services. Moreover, Rwanda can attempt to access the larger regional digital market, to increase scale economies and reduce the costs of digital services.[66]

There is scope to strengthen the regulatory framework for the single wholesaler of wireless broadband and to improve access to the radio spectrum for wireless services to ensure quality of service and cost-based prices that encourage the use of the ne**twork.**[67] Moreover, Rwanda needs to develop a policy to manage, allocate, and price radio spectrum in order to allow operators to deploy new wireless technologies for broadband access.

[64] World Bank (2019). Lighting Rwanda. Economic Update, June 2019. Washington DC.

[65] World Bank Group. Transforming for the Jobs of Tomorrow. Country Private Sector Diagnostic. Washington DC.

[66] Ibid.

[67] Ibid.

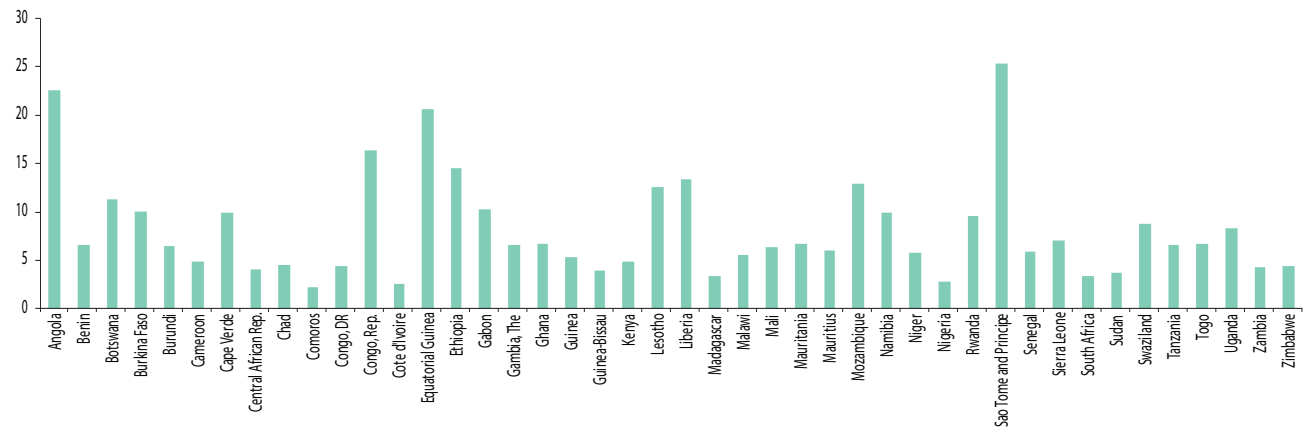
ANNEX VI: MAJOR INFRASTRUCTURE PROJECTS, 2011-2020

Project name	Year	Sector	Project type	Amount ($, million)
Agahozo-Shalom Youth PV Solar Plant (8.5MW)	2014	Renewables	Public sector	24.1
Base-Rukomo Road (51.54KM)	2014	Transport	Public sector	78.99
Gishoma Biomass Power Plant	2014	Energy	Private sector	36
HQ Peat-fired Power Plant (80MW) IPP	2017	Power	Private sector	345
Kagitumba-Kayonza-Rusumo Road (208KM) Rehabilitation	2016	Transport	Public sector	171.8
Kibugabuga – Gasoro Road (66KM) Rehabilitation	2017	Transport	Public sector	85.51
Kigali Bulk Water Supply Plant PPP	2017	Water	PPP	60
Kivuwatt Gas-Fired Power Plant (25MW) IPP Phase I	2011	Power	Mixed[68]	141.74
Musanze Hydropower Plant	2017	Energy	Public Sector	17
Ngoma - Ramiro Road (53KM) Rehabilitation	2018	Transport	Public sector	72.52
Rwanda Electricity Sector Strengthening Project	2015	Power	Public sector	95
Rwanda Electricity Supply Improvement Phase 3	2018	Power	Public sector	23.4
Rwanda Feeder Roads Development	2014	Transport	Public sector	49
Rwanda Mountain Tea Giciye SHPP	2012	Energy	Private sector	12
Rwanda Sustainable Water and Sanitation Programme (RSWSP)	2018	Water	Public sector	262.92
TOTAL				**1,474.98**

Source: IJ Global Database and World Bank PPI Database

ANNEX VII: ESTIMATES OF INFRASTRUCTURE GAPS FOR SUB-SAHARAN AFRICA

(Percent of GDP)



Source: Rozenberg, J., Fay, M., (eds.) 2019.; Fay M. et al. 2019
Note: Spending is lower-bound estimate for infrastructure spending for power, water and sanitation, transport and costal protection and irrigation.

[68] Public and private financing was provided by the Emerging Africa Infrastructure Fund, the Netherlands Development Finance Company, the African Development Bank, and the Belgian Investment Company for Developing Countries.

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