



CREATING MARKETS IN RWANDA

Transforming for the Jobs of Tomorrow

COUNTRY PRIVATE SECTOR DIAGNOSTIC

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CONTENTS

<i>Acknowledgments</i>	<i>vi</i>
<i>Abbreviations</i>	<i>vii</i>
<i>Executive Summary</i>	<i>viii</i>
1 COUNTRY CONTEXT	1
2 STATE OF THE PRIVATE SECTOR	3
3 CROSS-CUTTING CONSTRAINTS TO PRIVATE SECTOR DEVELOPMENT	8
Firm Capabilities	9
High-Input Costs	10
Enabling Environment	16
4 GOVERNMENT STRATEGY TOWARD THE PRIVATE SECTOR	19
5 SCANNING FOR MARKET POSSIBILITIES	21
Objectives and Approach	21
Is There a Role for the Private Sector?	22
Possibilities for Market Creation	25
6 DEEP DIVES FOR MARKET OPPORTUNITIES	31
Agribusiness	31
Affordable Housing	49
APPENDIXES	65
A World Bank Group Strategy and Portfolio in Rwanda	66
B Definition of Sectors	67
C Individual Sector Analysis for the Sector Scan	68
D Results of the Sector Scan	95
E Methodology for Affordable Housing Cost Benchmarking	98
F Intermediate Input Costs for Affordable Housing Cost Benchmarking	99
G SOE Presence	101
<i>Notes</i>	<i>103</i>
<i>References</i>	<i>104</i>

BOXES

2.1	Rwanda's SOEs	5
3.1	Rwanda has a place for experimenting innovation	9
3.2	Rwanda's one laptop per child project	14
4.1	First National Strategy for Transformation and Prosperity	20
5.1	Definitions of development impact and feasibility	22
6.1	Resolving market failures in agribusiness with technology-enabled solutions	35
6.2	Climate change and agribusiness in Rwanda	36
6.3	Solar irrigation solutions in Kenya	36
6.4	Fighting stunting with improved foods	37
6.5	Methodology for subsector analysis	39
6.6	Innovative linkage models in coffee Coffee processors and exporters are actively broadening the scope of their activities, using a range of innovative linkage models	43
6.7	New developments in affordable housing	51
6.8	Demand-side constraints	55
6.9	New technologies in Rwanda's housing sector	60

FIGURES

2.1	Distribution of firms by size	4
2.2	Distribution of firms by age	4
2.3	Registered firms	5
2.4	Within-firm employment	6
2.5	Share of firms and employment by sector	6
2.6	Trade openness	7
5.1	Sector scan results	23
6.1	Composition of agriculture GDP	32
6.2	Overview of value chain nodes' performance	33
6.3	Cassava production and yield	46
6.4	Projected number of new residential units annually by market segment	50
6.5	Total house cost and breakdowns	54
6.6	Cost difference between Rwanda and South Africa	54

TABLES

5.1	Overall weighted development impact and feasibility scores	23
6.1	Crops with a comparative advantage in Rwanda	38
6.2	Impact, competitiveness, and market opportunities in select subsectors	39
6.3	Affordability of housing units at current price levels	51
C.1	Development impact: Oil, gas, and mining	68
C.2	Feasibility: Oil, gas, and mining	69
C.3	Development impact: Finance and Insurance	70
C.4	Feasibility: Finance and insurance	70
C.5	Development impact: Water and Sanitation	72
C.6	Feasibility: Water and Sanitation	72
C.7	Development impact: Energy	73
C.8	Feasibility: Energy	74

C. 9	Development impact: ICT Infrastructure	75
C.10	Feasibility: ICT Infrastructure	76
C.11	Development impact: Transport	77
C.12	Feasibility: Transport	77
C.13	Development impact: ICT Services	78
C.14	Feasibility: ICT Services	79
C.15	Development impact: Tourism	80
C.16	Feasibility: Tourism	81
C.17	Development impact: Light Manufacturing	82
C.18	Feasibility: Light Manufacturing	83
C.19	Development impact: Other Manufacturing	84
C.20	Feasibility: Other Manufacturing	84
C.21	Development impact: Education	85
C.22	Feasibility: Education	86
C.23	Development impact: Health	87
C.24	Feasibility: Health	88
C.25	Development impact: Retail and Wholesale Trade	89
C.26	Feasibility: Retail and Wholesale Trade	89
C.27	Development impact: Construction and Construction Materials	91
C.28	Feasibility: Construction and Construction Materials	91
C.28	Development impact: Agribusiness	93
C.29	Feasibility: Agribusiness	94
D.1	Summary of potential for development impact benchmarking for Rwanda	95
D.2	Summary of constraints benchmarking for Rwanda, current conditions	96
D.3	Summary of constraints benchmarking for Rwanda, conditions after 5 years of reform	97
F.1	Comparison of intermediate input costs from the primary economic sector	99
F.2	Comparison of intermediate input costs from the secondary economic sector	100
G.1	SOEs in sectors	101

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ABBREVIATIONS

2G	second generation
3G	third generation
4G	fourth generation
ABT	alternative building technology
BoQ	Bill of Quantities
BNR	National Bank of Rwanda
CPSD	Country Private Sector Diagnostic
CWS	coffee washing station
DRC	domestic resource cost
EAC	East African Community
EIU	Economist Intelligence Unit
FDI	foreign direct investment
GDP	gross domestic product
GoR	Government of Rwanda
ICTs	information and communication technologies
INRR	Infrastructure and Natural Resources
IFC	International Finance Corporation
LTE	long-term evolution
MICE	meetings, incentives, conferences, and exhibitions
MINAGRI	Ministry of Agriculture (Rwanda)
MINECOFIN	Ministry of Finance and Economic Planning (Rwanda)
MRA	mutual recognition agreement
NISR	National Institute of Statistics of Rwanda
NPL	nonperforming loan
NTB	nontariff barriers
PPP	public-private partnership
R&D	research and development
RDB	Rwanda Development Board
RDF	Rwanda Defense Forces
RICA	Rwanda Inspection and Competition Authority
FRW	Rwandan francs
SEZ	special economic zone
SOE	state-owned enterprise
TVET	technical and vocational education and training
VAT	value added tax
VC	value chain
WASH	water, sanitation, and hygiene

EXECUTIVE SUMMARY

A Vision for Transformation

Rwanda has made unsurmountable strides along its development path. Rwanda has placed among the world's fastest-growing economies, climbing the development ladder from second-poorest in the world in 1994 to sit ahead of 19 other countries in 2017. Rwanda has successfully converted development aid into services delivery. Some social indicators outpace low-income peers, where Rwanda is now closer to the average of lower-middle-income countries, including infant and child mortality, life expectancy, and primary school enrollment rates.

Today, job creation lies at the heart of Rwanda's development challenge. With 38.2 percent of the population still living in poverty, 69 percent still primarily engaged in agriculture, and an estimated 230,000 young Rwandans entering the labor force *every year*, there is an urgent need to create productive jobs to drive inclusive economic transformation (EICV5 2016/17; NISR 2016a; OECD 2017).

Rwanda's high population growth could be either a blessing or a curse. As of 2015, 40 percent of the population was under the age of 15 (World Bank 2018). If productive jobs can be created, then Rwanda's youth can become a dynamic force for economic growth. Without job opportunities, unemployment and poverty are bound to soar.

The government of Rwanda (GoR) recognizes the urgency of creating new jobs. The new 30-year Vision for the period up to 2050, which is currently being finalized, elaborates the country's long-term development goals. "Vision 2050 is about ensuring high standards of living for all Rwandans" (MINECOFIN 2016). Vision 2050 focuses on five priorities, including transformation for prosperity, whereby "increased productivity and competitiveness will provide jobs for Rwandans" (MINECOFIN 2016) through private sector growth.

The core of transformation for prosperity is developing high-value and competitive sectors, to transition the population and economy from subsistence agriculture toward industry and high-skilled services. The government's vision is an economy with a dynamic, innovative, and productive private sector that is competitive in international markets and supports strong domestic linkages for job creation and sustained economic growth.

A Nascent Private Sector Facing Cross-Cutting Constraints for Competitiveness

Rwanda's firms have become a growing presence. In the three years between 2011 and 2014, the number of formal and informal firms in Rwanda increased by 18 percent, and the number of jobs in firms by a remarkable 37 percent. Jobs gains were had in firms of all sizes but were fastest in very small (1–4 persons) and very large (100+) firms.

Is Rwanda's private sector capable today of creating jobs for tomorrow? Although Rwanda's firms have grown rapidly, to around 150,000 firms by 2014, they employ only 360,000 workers, which was just 6 percent of the overall workforce. The pace of job creation in the formal enterprise sector has slowed down in recent years, expanding by around 8 percent between 2011 and 2012 compared to 4 percent between 2015 and 2016.

Involvement of private firms in job creation is a smaller share. The state continues to play an active role in the enterprise sector through state-owned enterprises (SOEs).¹ These firms are formal, tend to be older and larger, and operate across many sectors (World Bank 2018).² For example, the average size of formal firms is 16 employees and the average size of public firms and mixed firms identified in the enterprise census is 42 and 27 employees respectively compared to informal firms and private firms is 2 employees (NISR 2014).

An overwhelming majority of firms are young, informal, and small, lacking the scale economies critical for competitiveness. Ninety-three percent of firms had fewer than five employees, about 90 percent of the enterprises that were operational in 2014 were established after 2006, and 92 percent were informal. Firms are concentrated in the nontradeable sector, primarily low value-added services; wholesale and retail trade and accommodation and food services accounted for 75 percent of all firms. The share of jobs in formal firms, however, increased between 2011 and 2014, alongside concerted efforts by the government towards firm registration.

Access to export markets has proved challenging for Rwanda's manufacturing firms. Private sector growth is seen as a vehicle to increase foreign-exchange earnings and reduce the trade deficit—which, although improving, is about 15 percent of gross domestic product (GDP)—by enabling more exports regionally and globally, as well as substituting imports with locally-made goods. In 2015, the country had just 69 manufacturing firms (mostly involved in food) that were exporters.

Unlocking private sector investment is essential for private sector growth. Rwanda's investment rate, currently 26 percent, is relatively healthy, but a significant amount has been government-led and supported by foreign assistance. Net foreign direct investment inflows (3.1 percent of GDP in 2016) also compared favorably to the Sub-Saharan Africa average (2.5 percent). Nevertheless, the private sector credit-to-GDP ratio (21 percent in 2016 reported by the IMF) is similar to the average for low-income countries (20.9 percent).

The business environment for attracting private sector investment has been a key focus of the government. In the past, the government focused on a sound policy environment, creating a stable economy and a stable currency, demonstrating a commitment to efficient institutions, opening to trade, and investing in infrastructure and productive activities. Thanks to an aggressive reform campaign, Rwanda has been rapidly climbing the rankings of the World Bank Group's Doing Business

report. Major successes were achieved in areas such as opening a business, insolvency regulation, labor code, trade facilitation, taxation, among others.

But there is still much to overcome for private sector to drive jobs for tomorrow. Key cross-cutting constraints, on top of structural challenges, remain that make it difficult for firms to compete and market opportunities to be created. Many are well-known, and the object of numerous initiatives undertaken by the government. Others will need to play a stronger role in future policy concerns and may pose big policy choices. But all impact firm competitiveness and growth, and ultimately jobs.

Low skills levels lower firm productivity. Despite recent gains in school enrolment, access beyond primary schooling remains a major concern: secondary school enrolment rates are about 37 percent, and Rwanda has about 787 tertiary students per 100,000 populations. Management skills are also low, a key challenge for innovation.

Access to and the high cost of energy production and finance can contribute to high economy-wide costs. The average cost of electricity production, at 28 cents per kw, is among the highest in Sub-Saharan Africa. As a result, the GoR has adopted reductions in the industrial electricity tariff.³ Despite reductions in electricity tariffs, the supply is unreliable in Rwanda due to limited low-cost energy resources and a market size still too small to benefit from scale economies. Constraints in finance are less an issue of access, and more an issue of the high cost of financing and limited long-term financing.

High transportation costs result from Rwanda's land-locked geography. There exist no connections to regional railway networks, and trade relies wholly on air and road transportation. Missing or inadequate transport logistics domestically, including cold chain, storage and warehousing, and quality assurance, also impact export competitiveness.

Information and communication technology (ICT) services costs have improved but remain relatively high for many of Rwanda's citizens, and uptake remains low, despite ICT infrastructure having been rolled out across the country. Now that 4G/LTE network buildout is substantially complete (nearly 97 percent population coverage), there is a need to focus on ensuring strong uptake of services on the network. The cost of broadband, combined with low computer and smartphone ownership, income levels, and an erratic electricity supply, further place the services beyond the reach of most private users. High costs are in part due to a sole service provider around 4G/LTE, which resulted from a joint venture between the government of Rwanda, and includes an exclusive allocation of 4G radio spectrum. This has implications for uptake in downstream, ICT-enabled sectors and the profitability of mobile services deployment in rural areas and is the ongoing focus of the government.

Rwanda's high population density and low agricultural productivity puts enormous strain on the country's scarce land, one of its most precious natural resources. One area of unusual strength is the impressive formalization of land titles that benefit development of key sectors. Key issues in land markets are available and effective mechanisms for land consolidation for large-scale investments, and land transactions are not yet made publicly available.

Pro-competitive regulations need to improve to increase competition in markets. Implementation of new laws and the removal of remaining regulations that impede competition are continuing challenges. The Government has made effort to adopt the Rwanda Inspection and Competition Authority (RICA) and to make it effect, though is not operational yet and therefore the competition law has not been enforced.

Allocating sufficient resources to the RICA and extending its mandate to monitor the impact of SOEs on competition, promoting the principle of competitive neutrality to ensure equal treatment of all investors, and removing regulatory barriers to entry and rivalry in input sectors would improve the competition framework (World Bank 2018). The way Rwanda has entered into private public partnerships (PPPs) in some key infrastructure sectors such as telecommunications and electricity has not encouraged competition, although the situation is expected to improve after the recent adoption of the PPP Law.

Climate change pose risks to Rwanda’s agrarian economy. The average temperature of Rwanda has increased over recent decades, at higher levels than the global average, and rainfall patterns are becoming more irregular and unpredictable. The greatest impact of climate variability is on food production, where Rwandan agriculture is mostly rain-fed.

The Rwanda Country Private Sector Diagnostic

The purpose of the Rwanda Country Privates Sector Diagnostic (CPSD) is to identify market opportunities and constraints in sectors that advance the country’s development objectives. By assessing the landscape of private sector investment in the country, the CPSD identifies specific constraints to private sector investment and productivity growth, concrete opportunities that could materialize in the short term, and the reforms that will enable this materialization. It then discusses how specific actions by the public sector in collaboration with the private sector—by filling gaps in public investment, reforming regulations, and addressing market failures—could unleash sectors’ private investment potential.

The Rwanda CPSD is a continuation of the World Bank Group’s engagement of making Vision 2050 and transformation for prosperity a reality. In response to the GoR’s request to inform Vision 2050, the Bank Group started to engage through a Future Drivers of Growth study by identifying actions needed to achieve the country’s long-term growth aspirations (World Bank 2018). By identifying market opportunities for the private sector in the short term and constraints that can be addressed by policymakers, IFC investments, World Bank operations, and advisory work, the Rwanda CPSD can support the development of high-value and competitive sectors for job creation. Demonstrating that change is possible, and that markets can be created reasonably quickly, will not only give momentum but provide “proof of concept” that transformation can happen in Rwanda.

A Pathway of Transformation

The Rwanda CPSD identified two business sectors—agribusiness and affordable housing—that offer short-term opportunities for market creation, as well as potential for development impact. These two business sectors have significant potential for private-sector job creation in the next three to five years, in both urban and rural settings. They are also important for the economy as a whole, where together they account for over half of Rwanda’s GDP.

Agribusiness – Rwanda’s unique climate and rich soil offer opportunities to grow, process and export higher value-added food products to Europe and globally. Today, agriculture is mostly subsistence farming in low value-added crops, such as maize. Rwanda will need to move up the agriculture value chain. Local value addition in higher value-added export products is stunted due to low quality inputs, inefficient production techniques, and high transportation costs. Opportunities exist for the private sector to engage across all the nodes of the value chain to alleviate these constraints. With 70 percent of the population still engaged in agriculture, improved access to markets and more value addition would reach every village, and benefit everyone from farmers, traders, processors, and exporters.

Affordable housing – Rwanda faces a combination of urbanization and low supply of housing and infrastructure, especially for low-income families moving to cities in need of a place to live. There is a projected demand for 345,000 new houses by 2022 in Kigali alone. More than half of these new units would need to cater to the affordable housing segment of the market. In building housing for them, market opportunities cut across construction, infrastructure provision, local manufacturing of building materials, and professional services. By filling this gap, a flourishing private sector has other spillovers that can contribute to health and safety, local value addition, and skilled jobs.

Complementarities exist if both sectors were to take off simultaneously. Enhancing the productivity of agriculture would support the structural transformation process, which could accelerate urbanization and put additional pressure on the need for housing and infrastructure delivery. New innovations in building materials in the housing sector, such as straw, could support the agriculture sector.

Recommendations for the Cross-Cutting Constraints

Rwanda’s pathway to transformation will also require addressing the cross-cutting issues that challenge the overall competitiveness of the private sector, while tackling sector-specific constraints that exist in these sectors that offer short-term opportunities.

AGRIBUSINESS

As the backbone of Rwanda’s economy, agriculture (and agribusiness) is crucial for Rwanda’s growth and poverty reduction. The agriculture sector accounts for 39 percent of GDP and nearly three quarters of Rwanda’s employment. The country’s average annual income of \$550 per capita reflects a rural poverty rate of 49 percent, a figure that soars to 76 percent for families whose main source of income is agriculture.

Moving up the agribusiness value chain is critical to maintain continued contribution of the sector for growth and better job opportunities. A focus on higher value-added products with export potential to regional and international markets is necessary, given Rwanda’s small domestic market. Rwanda should seek to maximize access to regional and international markets with a strategy that includes strong national branding, internationally trusted food safety institutions and regulations, strong National Quality Infrastructure and easy trade. Rwanda should also explore strategies to significantly deepen (and formalize) its trade with the Democratic Republic of Congo—a market that is large and for which there is already significant

informal cross-border trade—as well as beyond the Congo market, notably the West African market and broadly other African markets. Though the number of jobs in agriculture may decline along this transformation, more jobs would be created in the manufacturing segments of the value chain.

Rwanda’s natural endowments give it a comparative advantage in a number of high-value crops with export potential, including tea, coffee, beans, grains, cassava, fruits, and vegetables. Coupled with efforts at improved farmer productivity in competitive products, Rwanda can develop a quality niche for its more competitive products, especially in the horticulture space. Livestock is another potential sector of competitiveness for Rwanda, which warrants further exploration.

Agribusiness investors have an outsized impact on the sector globally and should be encouraged. They bring good practice, improved market linkages for smallholders, improve professionalism/farming as a business mentality, quality control and other elements needed to help transform agriculture into agribusiness.

DEVELOPMENT IMPACT OR POTENTIAL – Agribusiness is a highly desirable sector across a number of dimensions. Agribusiness is a sector with immense opportunity for the private sector to move up the value chain that will have indirect impacts on poverty and employment. Given that 70 percent of the population is engaged in mostly subsistence agriculture in Rwanda, it is important for inclusive jobs, not only through backward linkages with farmers, by supporting better jobs in the processing sector, but also through impacts on growth, value addition, competitiveness, and productivity.

OPPORTUNITIES – Rwanda’s unique climate and rich soil offer opportunities to grow, process and export higher value-added food products to Europe and globally. Opportunities exist for the private sector to engage across all the nodes of the value chain. Key crops are tea, coffee, beans, grains, cassava, fruits, and vegetables.

CHALLENGES – Although land consolidation efforts have been ongoing since 2012, *the sector is challenged by land holding dominated by small holder farmers, poor water management, a lack of public and private capacity, and limited commercialization constrained by poor access to commercial and financial markets.* Rwanda also needs to overcome some critical constraints to logistics, agricultural inputs, postproduction facilities, transport, electricity, among others. There is also a lack of significant specialized farming.

PRIORITY INTERVENTIONS

MARKETS

- Strengthen knowledge and application of agriculture-related food safety health standards, such as aflatoxin, through the Rwanda Inspection and Competition Authority.
- Review and address packaging restrictions for agriprocessors and consider an exemption on the packaging ban for domestic agribusinesses competing with imported products not subject to the ban.
- Improve cooperative management and other aggregation measures to link smallholders into value chains to enhance opportunities that increase productivity.

- Strengthen the role and responsibilities of trade representatives in Rwandan embassies to support facilitation of export-market linkages and provide information on investment opportunities.

PROCESSING

- Develop a certification program for electrical and mechanical technicians to better meet the need for basic agriculture-related equipment maintenance and repair.

INPUTS

- Provide better information on matching fertilizer composition to product.
- Improve efficiency of input provision by reducing subsidized public-sector competition in input markets.
- Lead firms should identify and support irrigation investment schemes.
- Strengthen private sector representation in work with the government to develop models for improved private sector participation in the management of inputs.

EXTENSION

- Upgrade agriextension services practices, especially related to land conservation and productivity, as well as the use of pesticides and fertilizers.
- Improve agriscience and agribusiness management skills.

PRODUCTION

- Encourage formation and strong management of cooperatives to support improved aggregation and more efficient dissemination of good agripractices.

POSTPRODUCTION

- Review costs, quality, and efficiency of GoR-led agristorage facilities with the goal of transitioning into a greater management role for the private sector.
- With government and private sector representation, develop models for improved private sector participation in agristorage and storage management.

FINANCE

- Support financial institutions with risk-sharing arrangements to finance working capital and small-scale on-farm productivity-related investments.
- Invest in agritech instruments, especially related to savings and payments, agriproduction information, access to inputs and access to market information.
- Promote financial infrastructure in underserved rural areas, as well as low cost extension such as services.
- Explore risk-mitigating investments that target improved agritech market penetration.
- Promote development of agriclimate information systems for improved agriculture-related financial risk analysis.
- Development innovative finance mechanisms to support irrigation investments.
- Introduce agriculture-related insurance (crop or livestock).

INSTITUTIONS

- Continue support for agriculture-related private sector organizations to improve voice and input to government.

- Support policy-related analytics and research.

TRANSPORT

- Invest in transport and logistics generally.
- Support investment in operator-owned and -hired fleets that meets the volume needs of horticulture exporters.

AFFORDABLE HOUSING

In Rwanda, significant shortages exist in urban housing, as rising demand is driven by urbanization and changing demographics. Addressing affordable housing is therefore a key priority for the government.

However, costs of building a house are high in Rwanda, which challenges the supply of affordable housing. A cost composition of the housing value chain is key to understanding the challenges for affordable housing in Rwanda. Construction costs account for the greatest share of the difference in costs between Kigali and other regional markets, representing 52 percent of the total cost in Kigali compared with 48 percent in Nairobi.

A number of constraints exist along the housing value chain that contribute to its high-cost-low-affordability dynamic. Both public and private sector can play a supporting role in Rwanda's urbanization and housing challenge, which will also support jobs creation and income generation.

Alternative building technologies (ABTs) offer an innovative approach that can complement traditional construction techniques and materials. Rwanda is currently exploring options for introducing several innovations to the market, either by local Rwandan companies, or more commonly in joint ventures with international partners that seem to provide the initial technical and financial input required to bring the products to local market. There is similarly a potential role for new technologies for services delivery (for example, through solar energy) for housing that can address the challenge of adequately servicing housing locations.

DEVELOPMENT IMPACT OR POTENTIAL – Creating markets in affordable housing would support Rwanda's development objectives and have a transformational impact on the economy. The estimated direct contributions of housing construction and rental activity account for more than 10 percent of Rwanda's GDP—high when compared with other African economies. With rapid urbanization and growing incomes, not only will housing demand continue to rise but the direct impact on the construction sector, in terms of job creation and income generation, will be significant.

OPPORTUNITIES – There is a projected demand for 345,000 new houses by 2022 in Kigali alone. More than half of these new units would need to cater to the affordable housing segment of the market, and one-third for mid-range housing. In building housing, market opportunities cut across construction, local manufacturing of building materials, and professional services.

KEY CONSTRAINTS

Materials costs account for half the difference in the cost between identical houses in South Africa and Rwanda, followed by infrastructure costs (17 percent) and value added tax (15 percent). Compliance and approvals are also higher, where property

and housing standards in Rwanda are a major contributor to high housing costs. Import taxes add to materials prices and put homes built of these materials out of reach of most Kigali (and Rwandan) households. Professionals such as architects, engineers, and developers are in short supply.

PRIORITY INTERVENTIONS

BUILDING MATERIALS AND OTHER INPUTS

- Support private sector to invest in ABTs to complement traditional construction techniques and reduce the costs of construction materials with innovative approaches.
- Support local acceptance of alternative construction materials, for example through a communications campaign.
- Prioritize implementation of instruments for land assembly (that form a single site from a number of smaller properties) by the City of Kigali, which should help ensure land availability over the medium term.
- Upgrade land-access mechanisms, in addition to land banking, to make land accessible to developers to redevelop, especially in secondary cities, for example through land readjustment.
- Ensure provision of serviced land.
- Take steps to reduce logistics and transportation costs for imported materials (see cross-cutting constraints).

SKILLS

- Expand technical education for architects, engineers, and surveyors through collaboration with academic institutions.
- Expand vocational programs for technicians, such as electricians, plumbers, and contractors.
- Revise regulations around hiring foreign talent to meet skill shortages.

REGULATORY COMPLIANCE AND APPROVAL

- Develop an international-standard code and a planning approach that addresses challenges of high-density, including inclusive design, mixed-use developments, green building options, and broad partnerships.

URBAN PLANNING AND INCENTIVES

- Identify sites for medium-to-high-density housing (urban planners and policymakers).
- Adopt adapted planning and development standards, including construction, so that small plots with local construction materials and renewable energy can satisfy urban planning and building standards.
- Invest in the upgrading of existing informal housing areas, where feasible, which will require even greater public fiscal commitments.
- Undertake careful budgeting to ensure that the rate of land and services delivery expands year-on-year.
- Target incentives explicitly for affordable housing in a manner that is truly inclusive and addresses the range of market segments that are currently underserved.

COMPETITION

- Ensure a competitive environment for affordable housing development, through open procurement as opposed to single-sourced procurement.
- Incentivize the entry of new firms into manufacturing of construction materials using local raw materials, for example clay for ceramics.

SUPPORTING INFRASTRUCTURE

- Invest in new technologies for services delivery provision of housing infrastructure—water and sewerage, electricity, transportation—to address the challenge of adequately servicing housing locations.

Next Steps

The timing of the Rwanda CPSD is such that the actions identified will feed into upcoming World Bank Group products, including the Systematic Country Diagnostic, the new Country Partnership Framework, and ongoing operations in urbanization, mortgage finance, and agribusiness. Together, these create a natural pathway for the Rwanda CPSD to feed into Bank Group engagement, to ultimately support Vision 2050 and transformation for prosperity.

The CPSD will continue into preimplementation. During the CPSD process, doors open on new topics for policy dialogue. Some action areas require follow-up analytics or lend themselves to advisory services. Others are ready for implementation. The World Bank Group will discuss the action matrix together with the government and transform the high-level action plans into detailed joint implementation plans.



1

COUNTRY CONTEXT

A low-income country, Rwanda's economic performance and growth trends have been remarkable since the mid-1990s. Rwanda's three-and-half-fold increase in its income per capita since 1994 has placed it among the world's fastest growing economies. But the government's aspirations abound even higher. The new 30-year vision for the period up to 2050 elaborates the country's long-term development goals: to achieve upper-middle-income by 2035 and high-income status by 2050.

Transformation for prosperity is one of five priorities of Vision 2050. These aim to develop high-value and competitive sectors that are an avenue to creating productive jobs for Rwandans and to transition the population and the economy from subsistence agriculture toward industry and high-skilled services for sustained economic growth.

Favorable fundamentals suggest strong potential for continued growth through private sector development. These include, among others, a sound macroeconomic situation, favorable demographics, a competent and committed leadership, progress enhancing the business climate through past

reforms, and high ambitions for the country, with a recognition that these will entail future reforms. The authorities recognize that public sector-led growth has approached its macroeconomic limits and more aggressive reforms are needed at this important juncture to promote private sector investment and job creation.

Rwanda's economic performance and high development aspirations suggest a good moment to engage on private sector development through market creation. The country's Vision 2050 provides a useful platform for policy dialogue to shape the private sector agenda. The government of Rwanda requested support from the World Bank Group to inform its Vision 2050 through the recent Rwanda Drivers of Growth study (World Bank 2018). The Country Private Sector Diagnostic is the continuation of the World Bank Group's engagement of making Vision 2050 a reality and will feed into upcoming World Bank Group products. The Rwanda Systematic Country Diagnostic is underway and will inform the new Country Partnership Framework, along with other oper-



ations targeting private sector (see appendix A). These create a natural pathway for the Rwanda CPSD to feed into World Bank Group engagement.

By targeting competitiveness, private sector development can ultimately support job creation. With an estimated 230,000 young Rwandans entering the labor force *every year*, there is an

urgent need to create productive jobs to drive inclusive economic transformation (NISR 2016a; OECD 2017). The government has made significant achievements in the business environment for attracting private sector investment. But there is still much to overcome for private sector to drive jobs for tomorrow.

2

STATE OF THE PRIVATE SECTOR

Rwanda's firms are a growing presence in the economy. In the three years between 2011 and 2014, the number of formal and informal firms in Rwanda increased by 18 percent to nearly 150,000. The number of jobs in firms grew by a remarkable 37 percent, providing employment to nearly 362,000 workers in 2014 (NISR 2011, 2014).⁴

Jobs gains were realized by firms of all sizes and were greatest in very small and very large firms. The number of jobs in firms with up to four employees grew by nearly 50,000 between 2011 and 2014, while the number of jobs in firms with 100 employees or more grew by nearly 25,000 (NISR 2011, 2014). Together this represented nearly three-quarters of job growth in the enterprise sector.

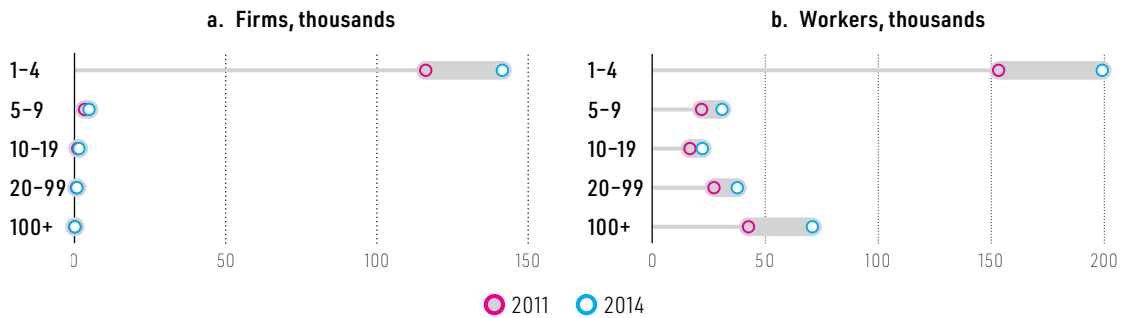
The share of employment in formal firms increased, alongside concerted efforts by the government towards firm registration. The share of nonfarm enterprises that were informal in 2014 fell to 92 percent, down from 95 percent in 2011 (NISR 2011, 2014).

In spite of these gains, the private sector remains small, and performance has not been dynamic

enough to meet the country's development challenges. Many of Rwanda's private enterprises lack the scale economies that are critical for competitiveness (World Bank 2018). Sixty-three percent of the firms in 2014 were one-person firms and 93 percent had fewer than five employees (figure 2.1). The share of firms of less than 10 employees is larger in Rwanda (96 percent in 2014) than other countries in Sub-Saharan Africa: 82 percent in Tanzania in 2012; 84 percent in Zambia in 2011; 93 percent in Cameroon in 2009.

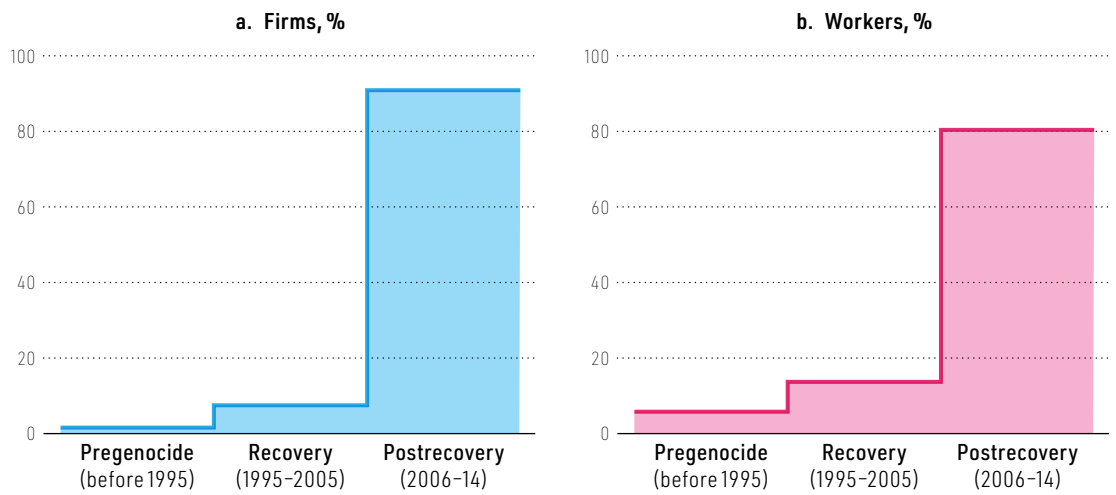
Similar to many other low-income countries, Rwandan firms, for the most part, are young and informal. These characteristics have been important for employment in the enterprise sector. About 90 percent of the enterprises that were operational in 2014, accounting for 80 percent of employment in the enterprise sector, were established after 2006 (figure 2.2). Older firms tend to be larger, with those established before 2006 representing only 10 percent of all enterprises and 20 percent of total employment in the enterprise sector (public and private firms). Informal enterprises accounted for 60 percent of employment in 2014.

FIGURE 2.1 DISTRIBUTION OF FIRMS BY SIZE



Source: Based on World Bank 2018 using data from NISR 2011 and 2014.

FIGURE 2.2 DISTRIBUTION OF FIRMS BY AGE



Source: Based on World Bank 2018 using data from NISR 2014.

State-owned enterprises (SOEs) occupy a prominent position in Rwanda’s enterprise sector. Public sector financing sought to make up for the dearth of formal private sector entities in the aftermath of the genocide, and SOEs played a useful role at the recovery and reconstruction stage, when medium- and large-sized private firms were largely absent. These firms are formal, tend to be older, and operate across many sectors of the economy (box 2.1) (World Bank 2018).

The private sector represents a small, but growing, share of overall jobs. Jobs in the enterprise sector represented just 6 percent of the overall labor force of nearly 5.8 million in 2014, up from 5 percent in 2011. SOE firms are older, which tend to be larger and thus provide for more jobs. For

example, the average firm size is largest in public administration (186), mining (58), electricity (54), education (24), health (23), and water supply (18) where SOEs are more likely to operate (NISR 2014 and appendix G). The average size of formal firms is 16 employees and the average size of public firms and mixed firms identified in the enterprise census is 42 and 27 employees respectively compared to informal firms and private firms is 2 employees (NISR 2014). Thus, jobs supported by the private enterprise sector is a smaller share. Instead, about 70 percent of the population are engaged in largely-subsistence agriculture, and about 5 percent in the public sector.

These trends happened alongside structural transformation of Rwanda’s economy. Agriculture’s

BOX 2.1 RWANDA'S SOES

State-owned enterprises (SOEs) in Rwanda's economy originated from privately funded production brigades, when the Rwandan Patriotic Front's enterprises invested in strategic sectors. In addition, the Rwanda Defense Forces' (RDF) enterprises generated funding to pay for the upkeep of military personnel and provided them with insurance and microfinance services.

According to the National Investment Policy, an SOE is a corporate entity recognized by national law as an enterprise and in which the state exercises ownership. This includes joint stock companies, limited liability companies, and partnerships limited by shares. In addition, statutory corporations, with their legal personality established through specific legislation, are considered as SOEs, if their purpose and activities, or parts of their activities, are of a largely economic nature. The Policy also defines an SOE as a legal entity that is fully or partially owned by the Government of Rwanda in order to undertake economic activities. The private sector, correspondingly, includes non-SOE firms (full or partial government ownership). Rwanda has recently implemented reform efforts, where the RDF's holdings were recently transferred to the MINECOFIN. For a summary of the sectors in which SOEs operate, see appendix G.

Source: World Bank 2018.

share in employment fell from 89 percent in 2000 to 68 percent in 2014, as the shares of both industry and services sectors picked up. As a share of GDP, industry's share increased from 13 percent to 17 percent between 2000 and 2016, while the share from services grew from 47 percent to 48 percent. Because the agriculture sector had the lowest labor

productivity at the beginning of the process, the transformation process brought significant gains in labor productivity. Nevertheless, inter-sectoral productivity gaps remain large, where agriculture's labor productivity is still only 43 percent of the average for the economy (World Bank 2018).

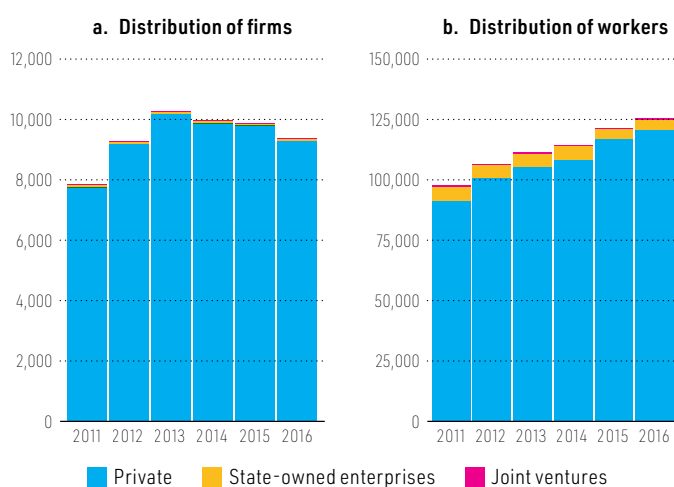
Formal firms have continued to add jobs, against the backdrop of strong economic growth. However, between 2013 and 2016, the number of formal firms actually declined by nearly 1,000 firms (figure 2.3), despite GDP growth averaging 7.5 percent over this time period. Job creation in the formal enterprise sector has mainly been driven by expansion of incumbent formal firms, and not by net entry of new firms (job creation and job destruction). This is because most of the firms that are entering and exiting the formal enterprise sector are very small.

There are signs that the pace of job creation—a key development objective of Rwanda—in the formal sector has slowed down in recent years. Most firms in Rwanda have experienced weak employment growth, and more than 90 percent of firms have failed to increase employment after entry. Only 4 percent of formal firms have experienced significant employment growth since 2011, but the incidence and rate of growth within these firms has also slowed since 2013 (figure 2.4). Enhancing growth opportunities for firms will be critical in creating productive employment opportunities.

Rwanda's impressive economic growth was from a low base, and the domestic market remains small. In 2017, Rwanda's GDP per capita (current prices, U.S. dollars per capita) was \$771.67 (IMF, 2017). This limits opportunities for domestic consumption to be a pull factor for future private sector development. The small domestic economy makes achieving economies of scale difficult and underscores the importance of exporting for firms' growth in Rwanda—a constraint that will remain in the short term. However, few firms export. In 2015, the country had 69 manufacturing firms (mostly involved in food) that were exporters (NISR 2017a).

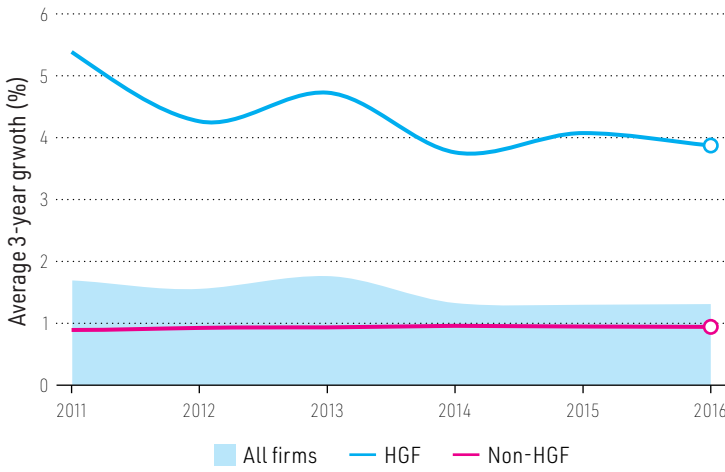
Instead, firms are concentrated in the nontradable sector, including lower-value added services. The two main sectors—wholesale and retail trade and accommodation and food services—accounted

FIGURE 2.3 REGISTERED FIRMS



Source: Based on World Bank 2018 using pay-as-you-earn administrative data.

FIGURE 2.4 WITHIN-FIRM EMPLOYMENT



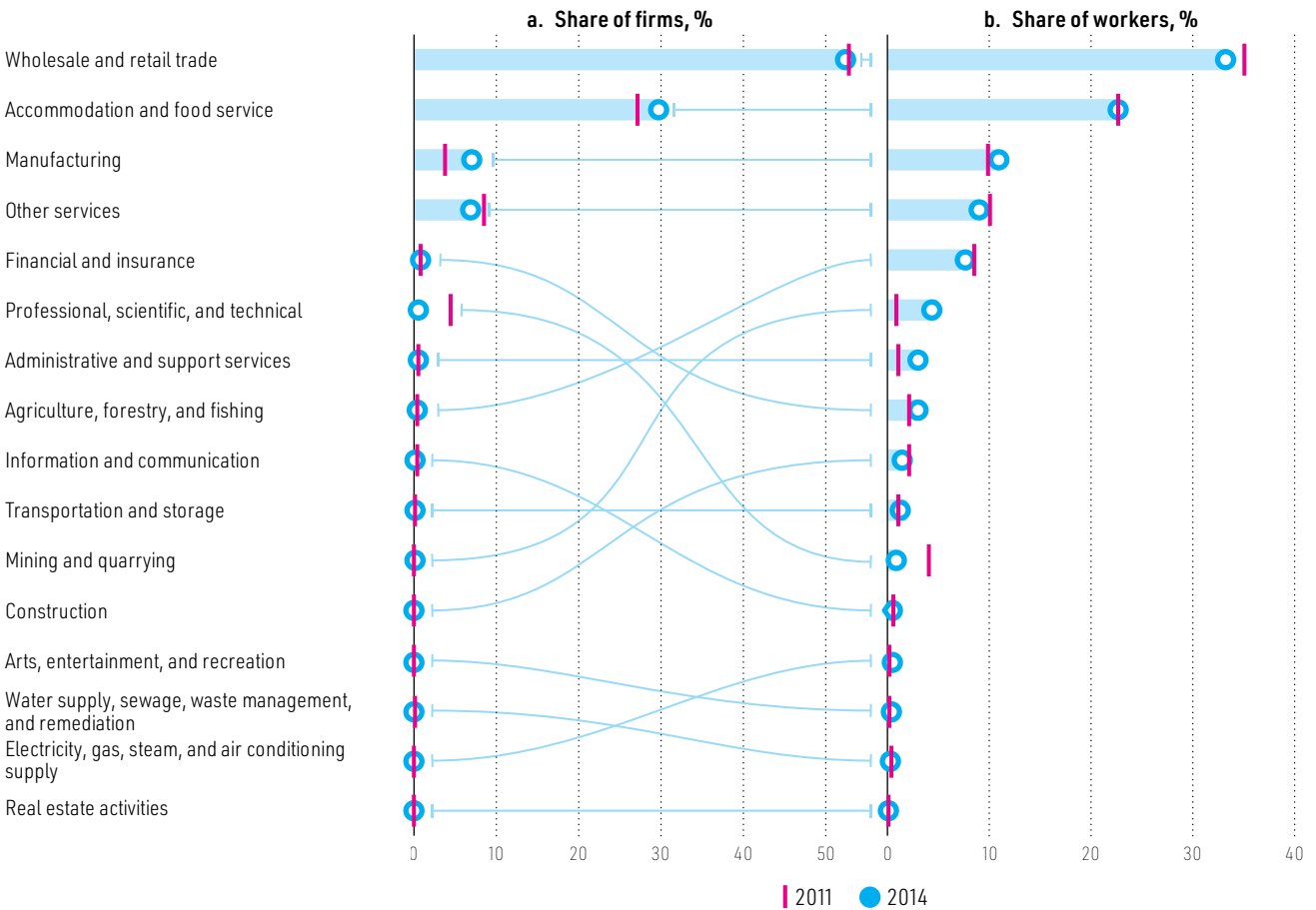
Source: Based on World Bank 2018 using pay-as-you-earn administrative data.
 Note: High-growth firms (HGFs), as defined by the Organisation for Economic Co-operation and Development, are enterprises with average annualized growth greater than 20 percent per annum over a three-year period.

for 75 percent of all firms and 45 percent of their total employment in 2014 (figure 2.5). While the number of manufacturing firms increased between 2011 and 2014, the sector saw a decline in its employment share.

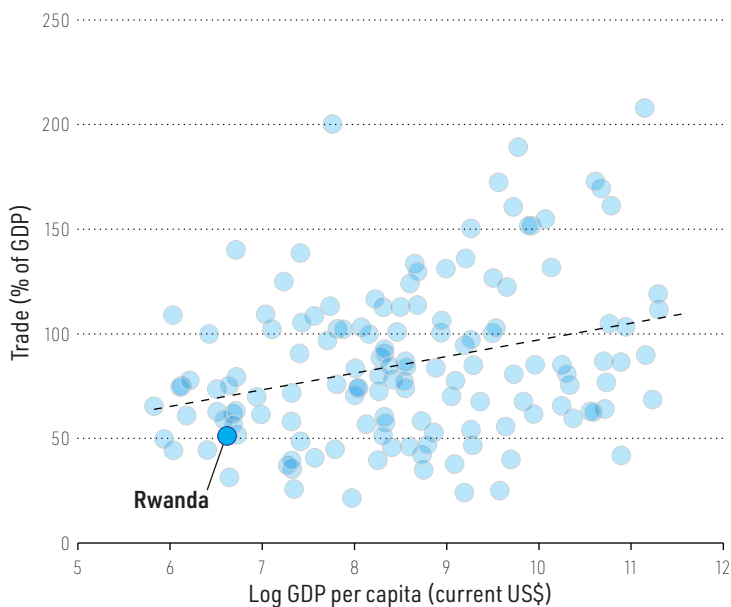
Being a small country with a nascent consumer class, scale economies will only come from accessing external markets. Yet outward orientation is below other countries at Rwanda’s level of economic development (figure 2.6). Goods exports grew from 4.4 percent of GDP in 1994 to 11.5 percent by 2017. Services exports (dominated by tourism) have risen at a faster pace, with their share in GDP increasing sharply from 1.4 percent in 1995 to around 10.9 percent in 2017.

Rwanda’s exports are specialized in select products, for both goods and services. Travel services comprise two-thirds of services exports,

FIGURE 2.5 SHARE OF FIRMS AND EMPLOYMENT BY SECTOR



Source: Based on World Bank 2018 using data from NISR 2011 and 2014.

FIGURE 2.6 TRADE OPENNESS, 2017

Source: Data from the World Development Indicators database.

and Rwanda's merchandise exports continue to rely heavily on commodities (coffee, tea, and minerals). Rwanda is a member of several regional trading blocs including the East African Community, which absorbs more than one quarter of merchandise exports.

Net foreign direct investment (FDI) inflows compare favorably to the Sub-Saharan Africa average, at 3.1 percent of GDP in 2016 compared to 2.5 percent for the region. In terms of profitability, the performance of these investments has been reasonably strong. For example, in 2016, the average return on equity in FDI projects averaged 12.8 percent, far above a global rate of return of 6 percent that year (EIU 2018).

A recent challenge has been attracting FDI into new projects. Intuitively, a high degree of profitability among existing FDI-led ventures should be a pull factor for new investment, but fairly modest inflows of equity capital indicate that this has not been the case. In 2016, retained (reinvested) earnings from net profits outstripped equity inflows, which is unusual in Rwanda, and shows that FDI has recently become less about starting up new projects and more about maximizing future returns on existing, successful enterprises.

FDI in export-oriented activity has been relatively low. This has implications for importing new technologies, technology adoption, learning, backward linkages, which are important for longer-term productivity growth. In terms of stock, FDI has mainly been channeled into information and communication technology (32 percent of the total), followed by finance and insurance (20 percent), manufacturing (14 percent), and tourism (10 percent) (EIU 2018). Interestingly, some sectors with the highest rates of return, namely agriculture and construction, are receiving a comparatively small share of FDI (EIU 2018).

Innovation capacity of firms is also incipient in Rwanda, a situation mirrored on the supply side by weak research capacity in the country. Rwanda has significantly improved its position in global rankings of innovation capacity. For example, on the Global Innovation Index, it advanced from a ranking of 112 in 2013 to 99 (out of 126) in 2018, exhibiting one of the best performances in the region. However, in some areas it appears to be doing less well, especially those related to knowledge and technology.

Access to markets and linkages is a key constraint reported by the private sector. Domestic market linkages in Rwanda face challenges, both in terms of linking primary and intermediary producers with later stages of the value chain and linking final producers to consumers. Improving domestic value chains and linking farmers to markets have been on the government's agenda for several years, but overall capacity utilization remains low, at 63.1 percent, according to Rwanda's Integrated Business Enterprise Survey (NISR 2017a). The main reason for the underutilization of firms' capacity is a lack of access to buyers (reported by 64.2 percent of respondents). Nearly half (42 percent) of firms report that unreliable supply of inputs is a reason for underutilization, while one-third (33 percent) of firms report a lack of working capital.⁵ Capacity utilization increases with firm size: micro-firms (with 1–3 employees) on average reported 50 percent of capacity used, compared with 61 percent in small firms (4–30 employees), 76 percent in medium firms (31–100 employees), and 80 percent in large firms (more than 100 employees).

3

CROSS-CUTTING CONSTRAINTS TO PRIVATE SECTOR DEVELOPMENT

Rwanda has achieved a sound macroeconomic situation—a key building block for a private sector to emerge. In the past, the GoR focused on creating a stable economy and a stable currency, demonstrating a commitment to efficient institutions, opening to trade, and investing in fundamentals for business growth and attraction of foreign direct investment (FDI).⁶ In 2016, the government launched a policy mix of fiscal constraint and flexible exchange in response to a deteriorating external account.⁷ Together with an improved external environment, these policies have substantially improved Rwanda’s growth outlook.

Unlocking private sector investment is essential for private sector growth and job creation. Public investments and improved service delivery have underpinned Rwanda’s strong economic performance. However, the public investment-led growth model will be hard to sustain over the long term without undermining debt sustainability, high-

lighting the need of private investment to drive growth and job creation going forward.

Rwanda’s structural features—small and landlocked—challenge the private sector to play this role. Forty percent of potential investors in Rwanda cited the limited market as a weakness of the country as an FDI location—more than double any other response.⁸ Twenty percent of companies—the second highest response—saw the geographic position as a weakness. This challenge is also reflected in 16 percent of respondents seeing transportation as a challenge. These structural features mean Rwanda will have to work even harder to address the constraints that impact private sector growth and overcompensate with strong actions.

While lessened, a number of other challenges persist for firms that continue to dampen private sector development. Focusing upstream reform efforts on these constraints will support private

investment and market creation. The Rwanda Drivers of Growth study (World Bank 2018) diagnosed many of the underlying causes of these cross-cutting constraints, and identified policy interventions to alleviate these constraints, summarized herein. These constraints impact the costs of inputs, the enabling environment, and firm capabilities.

Firm Capabilities

Innovation and technological diffusion are in the center of the biggest development gains in history. Innovation is the ability for firms to introduce a new product, a new process, a new idea, a new technology, or a new solution. The pace in which Japan, Singapore, and the Republic of Korea managed to catch up with the technological frontier and transition towards innovation-driven economies is commonly referred in the literature as the “Asian miracle” (World Bank 1993; Stiglitz and Yusuf 2001).

Innovation usually requires a complex set of complementarities, and lack of firm capabilities are among the key barriers to foster technology adoption, innovation, and entrepreneurship in Rwanda (along with infrastructure and access to markets). To face these challenges, it is key to promote entrepreneurship and ensure an increasing number of farms and firms in Rwanda with capabilities to absorb and introduce new production processes and technologies.

BOX 3.1 RWANDA HAS A PLACE FOR EXPERIMENTING INNOVATION

Rwanda has been developing cutting edge examples of innovative solutions applied for delivering services. Zipline operates in Rwanda a drone delivery system at national scale to send urgent medicines like blood to patients across the country. The project that started with a partnership between the company and the government of Rwanda, serves 21 hospitals nationwide and has been working since October 2016.

The innovation system in Rwanda is still incipient, but several elements have improved in the last two decades. Several institutions and new regulations have been recently implemented in Rwanda. The government is also very receptive to new things, and an ecosystem for innovators (box 3.1). On the supply side, the country has increased the number of higher-education institutions.

Skills are the foundation for innovation—an area where much more effort is needed. While wages in nonprimary sectors are competitive at around \$40 per month (FRW 31,300) (NISR 2016a), labor productivity can be severely hampered by an inadequately skilled labor force. Almost 20 percent of firms in Rwanda report access to skills being a constraint to their business (NISR 2017). While 21 percent of investors found the quality of labor a relative strength, 19 percent of international investors consider it a weakness, according to the recent survey of potential investors undertaken by the World Bank. Large businesses report more severe access to skills constraints compared with their smaller counterparts.

This is largely driven by relatively low educational attainment, with only 31 percent of adults aged 25 and above completing primary education, while another 30 percent are illiterate. This figure does improve for younger cohorts, with illiteracy among youth aged 15–24 only at 15 percent—a number that is expected to decline further still in the coming years and decades.

Skills deficits also arise from a disconnect between firms’ needs and the skills of graduates. The GoR, through the Workforce Development Authority and National Employment Program, has been targeting skills development, especially through technical and vocational education and training provision. On-the-job training programs have faced significant challenges in finding suitable apprenticeships for their students. Micro and small firms lack basic business management skills (PSF 2013). Furthermore, several of Rwanda’s priority value chains rely heavily on soft skills and language skills, especially the tourism and hospitality sector, and information and communication technology (ICT)-enabled services.

Barriers to the movement of foreign professionals also challenge improvements in skills

availability for firms. Professional services play a critical role in the functioning of modern, services-centric economies. Aligned with the country's stated aim of becoming a regional-services hub, Rwanda's professional services market is the most open in the region. Rwanda has signed several mutual recognition agreements (MRAs) of qualifications of professionals, the most important of which are those with its East African Community (EAC) partners. An important shortcoming of EAC-brokered MRAs is the fact that, while agreed by the professional licensing authorities of each EAC member, they have yet to be formally adopted by the EAC Council of Ministers at the regional level.

Weak firm capabilities also stem from shortfalls in management practices. Addressing management capability gaps will also be a crucial to support innovation. Enterprises must have the absorptive capacity to adopt and carry out new research and hold longer-term strategic views on firm and product upgrading, and the human resources necessary for innovation.

Recommendations and policy interventions:

- Strengthen technical and vocational training by collecting and disseminating information on the quality of skills providers and the returns to skills.
- Increase access to financing (including private) to expand enrolment in the tertiary sector. Enrolment in high-return fields could be increased through financing incentives and improving the quality of science and engineering instruction in earlier grades.
- Provide technological extension services to build managerial and organizational capabilities by implementing a survey to measure management capabilities and practices of Rwandan firms. Based on this evidence, examples of areas in which these interventions could be suitably adopted in Rwanda includes (1) providing training and coaching services to diffuse good business managerial practices, (2) complementing business support programs with personal initiative training, (3) expanding and improving the quality of graduate-level management courses, (4) providing manage-

rial training to cooperatives that support farmers, and (5) increasing interaction between multinational firms and local suppliers.

- Rwanda should pressure its regional trading partners to turn agreed MRAs into formal treaty provisions subject to monitoring and dispute settlement. For MRAs to be effective, coordination between trade, migration, and professional associations is important.
- Rwanda should encourage the private sector to provide apprenticeships, professional internships, and on-the-job training to young graduates to build their skilled capacity.

High-Input Costs

Availability and cost of key inputs—including finance, electricity, ICT, and land—are essential for firm competitiveness and growth. Enhancing growth opportunities for firms will be critical in creating productive employment opportunities. In turn, efficient access to key inputs is critical for firms to be competitive and grow. Yet firms report challenges in product markets to scaling up private investment.

Rwanda's financial sector has made great strides towards becoming a modern financial sector. Banks, microfinance institutions, savings and credit cooperatives, insurance companies, pension funds, and capital markets firms are providing an expanding range of products and services to address the financial needs of the private sector, even though there is still scope for further improvement. Currently, products offered to the private sector range from payments over savings, to credit, insurance, and retirement products, with different levels of sophistication and innovation. Rwanda recently made reforms to strengthen its crisis preparedness and contingency planning (BNR), launched a financial education curriculum (MINECOFIN), and a long-term saving scheme.

Availability of affordable finance or bank loans was nevertheless the number one perceived constraint reported by firms for their business, with two-fifths of firms reporting that access to affordable finance was a problem (NISR 2017a). Constraints to finance are less an issue of access,

and more an issue of high cost of financing and limited long-term financing. The prime interest rate remains stubbornly high at 16 to 18 percent, making securing finance for all but the most lucrative ventures untenable.

Credit to firms is similar to other low-income countries. The private sector credit-to-GDP ratio stood at 21 percent in 2016 as reported by the IMF, compared with 20.9 percent for low-income countries overall.⁹ Only 9 percent of firms have short-term bank loans, while only 3 percent have long-term bank loans, a decline since 2011 (NISR 2017a). The number one reason reported by firms for not exporting was that enterprises cannot obtain finance to export—39 percent of firms identified this as a constraint for exporting (NISR 2017a).

The high cost of borrowing stems from low savings domestically, underdeveloped capital markets, challenges to reach economies of scale in the financial sector (rather than inefficiencies), and the legal and regulatory framework. Higher interest margins observed in Rwanda are not a result of market power, but a function of higher operational costs. Rwandan banks cannot achieve scale economies due to the small market with comparatively large numbers of competing banks, as evidenced in comparison with Kenyan banks, which are significantly more profitable than their Rwandan peers. This is despite foreign banks having a rising presence, which accounted for 46 percent of all banking sector assets as of end 2016. The entry of foreign banks was a particularly welcome development as some of them focused on underserved market-segments (low-income households and SMEs) using more innovative lending techniques (for example, cash-flow based lending and agent banking). These higher operational costs result in high lending rates and relatively low profitability.

Rwanda has very limited capital market investors or instruments. This challenges availability of long-term finance, where intermediating long-term funds in pensions, insurance, or the banking system requires a functioning capital market. Rwanda is linked to the EAC capital market infrastructure—a technology platform designed to link the Capital Markets of the East African Partner States.

Other EAC States currently linked are Uganda and Tanzania.

Domestic savings also challenges availability of long-term financing. In 2007, gross domestic savings as a proportion of GDP was nearly 19 percent but the ratio lowered to 10.6 percent in 2017/18 amid high levels of public and private final consumption (Financial Sector Backward Looking Joint Sector Review Report 2017/18).

A high level of collateral and the low availability of alternative financing also challenge firms in accessing finance. The Rwandan financial sector is dominated by commercial banks, all of which require more than 100 percent finance value in collateral (including movable collateral, which functions well). Financial product diversity is also limited, which means that access to capital for fixed property and equipment is equally as scarce as access to working capital products and insurance. The country has engaged in several initiatives to promote e-payments, although there are no regulations for e-payments. Other challenges include lack of qualified personnel (World Bank 2014).

Recommendations and policy interventions:

- Preserve and strengthen the stability and performance of the financial sector by completing the major reforms recently undertaken to the legal and regulatory framework for the sector, including strengthening the system to deal with a financial crisis, sound debt management policy, and financial education and raising awareness to build a culture supportive of long-term savings and investment.
- Broaden the base of institutional investors by allocating government funds efficiently for productive use versus term deposits, by reforming the predominantly public pension sector with the establishment of a new regulatory regime and other measures aimed at strengthening the management and governance of the institution, and by developing a modernized insurance sector.
- Deepen regional market integration by harmonizing the legal and regulatory frameworks, by adopting a single-licensing regime and

MRAs among regulators, by building up regionally compatible financial infrastructure, by strengthening cross-border supervisory practices, and by strengthening data gathering.

- Attract finance beyond the region by developing a pipeline of credible issuers (including sub-national issuers), by building a credit culture, and by developing capacity among investors.
- Rwanda should promote regional convergence in payments-related regulations for financial transactions.

Rwanda's power sector has grown rapidly in the past decade and outpaced many of its peers in Sub-Saharan Africa. Blackouts have become less frequent and more Rwandans have access to electricity in their homes than at any time in the country's history. Steady growth is expected to continue over the next decade. Rwanda has implemented a suite of restructuring measures to improve governance of the electricity utility. The private sector has become a strategic partner for Rwanda's power sector through its investments in power generation and off-grid access. If the government continues the path towards making the utility holding company (Rwanda Energy Group) financially independent and the new private-public partnership (PPP) law is implemented as planned, the governance framework in the power sector can become a model for sector governance in Rwanda more broadly.

Doing Business indicators report that the cost of electricity, which is among the 10 highest in sub-Saharan Africa, are a major obstacle in scaling up private investment. Unit costs are high (around \$0.25 per Kilowatt hour [kWh] in fiscal 2017). Even at a subsidized rate (\$0.20 per kWh on average), firms pay a higher price of electricity compared with neighboring countries.

Power outages—particularly for manufacturing firms—also hurt competitive advantage. One-quarter (26.1 percent) of firms report that access to reliable electricity is a challenge to their operations (NISR 2018). Power outages cripple production and capacity utilization, as well as increases firms' costs due to low production or

generator use. This is particularly the case for larger firms in manufacturing and high-end service sectors for which high-quality connectivity is paramount.

Electricity supply is expensive and, despite improvement, unreliable in Rwanda due to limited low-cost energy resources and a market size still too small to benefit from scale economies. The sector is heavily reliant on imports, which account for more than 80 percent of the inputs used by the sector (such as fuel for local electricity consumption or transport). More than 80 percent of power generation is from domestic resources.

Recommendations and policy interventions:

- Conduct a comprehensive assessment of the potential of low cost, low carbon energy resources available for electricity generation and options for their optimal exploitation, including a detailed assessment of the development potential of dissolved methane in Lake Kivu.
- Promote regional electricity trade to take advantage of the regional energy potential of lower-cost supply sources through bilateral contracts (consistent with keeping adequate levels of security of supply), closely coordinate with neighboring countries to ensure the planned cross-border transmission infrastructure projects are not delayed further and participate actively in developing the East Africa Power Pool platform to help balance regional short-term mismatches of demand and supply.
- Streamline energy sector planning and decision making and improve demand forecasts to ensure that demand and supply are adequately balanced.
- Consistently apply the new PPP Law and its guidelines to the procurement of new power generation capacity to promote competition between developers and reduce cost to the country.

Efficient transport systems and services are the backbone of competitiveness, either for access to inputs or for exports, for any economy. Constraint to transport competitiveness can arise from the

absence of robust systems (road network assets, railway network, air cargo networks) and service providers (fragmented trucking sector, inland container facilities, dedicated air freight providers). This has serious negative consequences for the competitiveness of an economy, as it increases the costs of imports (for consumption or for inputs to production) and exports.

For Rwanda, it is all the more important, where the geographically landlocked nature of the country imposes a significant “logistics penalty.” Rwanda features no connection to regional railway networks, and trade relies wholly on air and road transportation (for a more detailed discussion on this challenge, see chapter “Transformation through Trade: Using Exports and Regional Integration to Drive Future Growth” in World Bank 2018).

Rwanda has implemented reforms to improve the logistics environment, particularly the time to import and export. Bringing down the time and cost of trading has been a priority for Rwanda and the EAC since the inception of the Northern Corridor Integration Projects in 2013, which links Burundi, Rwanda, and Uganda with Kenya’s maritime port of Mombasa. There has been a 72 percent reduction in the time it takes to reach Kigali since 2013, largely credited to the Single Customs Territory clearance procedures that reduced the administrative burden for traders and reduced the amount of time involved in customs formalities (Vanguard Economics 2017).

Despite improvements in time to trade, the cost to trade has remained stubbornly high, only declining by 28 percent since 2013. At an average \$3,633 per container from Mombasa to Kigali, Rwanda remains one of the most expensive places for a container to reach (Vanguard Economics 2017).

The key transport sector issues include connectivity, fiscal sustainability, climate resilience, and human capital. Connectivity, for example, manifests in urban mobility, logistics, economic corridors, and feeder road networks. Complex institutional arrangements and capacity constraints pose implementation challenges. Standards will need to be ensured to support all-weather accessibility in connectivity.

Infrastructure issues along the trade corridors are a key reason for the challenges faced. These include: transport system deficiencies in terms of inadequate availability and poor quality of road, rail, and water infrastructure networks, as well as associated terminal and handling facilities; presence of nontariff barriers (NTBs) along road-based trade routes to and from Rwanda; high tariffs for infrastructure use; and skills gaps along the trade value chain resulting in bottlenecks and delays (Deloitte 2014).

From Rwanda’s perspective, improving trade and logistics cannot just be a country-wide prerogative, but must be a cooperative venture with its regional neighbors. The dependence of Rwanda on the Central and Northern trade corridors through Kenya, Uganda, and Tanzania means that efforts of Rwanda in improving logistics performance is critically dependent on operations in bordering countries (including port, road, and systems). Efforts are underway to develop rail networks in the central corridor.

Missing or inadequate transport logistics domestically also impact export competitiveness, and affect hinterland connectivity, cargo movement in Rwanda, storage at borders, and with existing air corridors (Deloitte 2014). Extensive investment is underway in a network of feeder roads nationwide, supported by multiple donors. However, storage facilities domestically need investment and improvements, particularly in the agribusiness sector where perishable products spoil quickly. The facilities that exist are either inaccessible to farmers, or are of poor quality, often lacking key infrastructure.

Logistics services are mostly provided by the owners of the goods (1PL) or the assets (2PL) used to provide these services.¹⁰ Other than freight forwarders, third-party service providers (3PLs) are limited. The international 3PLs providing services in Rwanda (transport and warehousing services, courier services or airfreight) currently operate mainly out of Kenya and to some extent Tanzania (World Bank 2018).

Rwanda needs to improve the human capital capacities in order to enlighten the Center of Excellence as a human capital investment.

Improvement of human capital can allow Rwanda to develop its standards for transport, road safety data collection and enable data-informed policies, for improved road asset management, rural road maintenance standards and practices, better construction capacity and better management in construction industry, as well as enable the local industry to play an important role in the country as an important export sector in the economy.

Recommendations and policy interventions:

- Further lower transport costs through intensive collaborations on Rwanda's two trade corridors. Investments in off-dock terminals near the ports of Dar es Salaam or Mombasa could also help, as well as freight terminals in the proposed rail line.
- Develop Rwanda as a regional logistics hub by attracting pioneer foreign firms in logistics. As trade between Rwanda and its neighbors and the world expands, the government should actively court the establishing operations of 3PLs in Rwanda (World Bank 2018).
- RwandAir's expansion offers considerable opportunities, but more should be done to analyze contingent liability (1 percent of GDP in the form of government operational and capital expansion) and contain the potential financial risks for the government.

- Aggressively pursue open skies arrangements in air transport.
- Bonded warehouses at the two Democratic Republic of Congo border locations would improve cross-border trade flows by managing security issues.

Harnessing the power of digital technology to build vibrant digital economies can overcome the development challenges of being landlocked to drive inclusive economic growth. To build a successful and inclusive digital economy, countries must first build the foundational elements that will drive high-impact use. Digital skills and literacy, digital platforms, digital infrastructure, financial services, and entrepreneurship are the foundational elements to applications of usage through e-commerce, open banking, and data lockers. This requires targeted digital economy development interventions to ensure an enabling environment for a digital economy to thrive, as recognized and supported in the Digital Economy for Africa initiative.

Strong government commitment to affirming the role of ICT in the economy—as is present in Rwanda—is instrumental in achieving goals for the role ICT can play in growth and development. government is embracing and supporting the digital economy, taking initiatives to get its citizens online and improve digital literacy (box 3.2). Government led an impressive roll-out of telecommunications infrastructure that reaches 96 percent of the population. Rwanda has also rolled out e-government delivery systems for provider management and citizen engagement, digital ID, and training for digital literature by teachers in school and government officials.

In spite of these achievements, ICT uptake remains low. The household penetration rate of fixed high-speed internet subscribers is less than 1 percent, well below the regional average of 6 percent. This reflects purchasing power of Rwanda's citizens, combined with low computer and smartphone ownership and an erratic electricity supply. Looking at cost relative to GNI, Rwanda's best rank is in mobile broadband handset-based prices (ranked 110 in the world, ITU 2016), followed by

BOX 3.2 RWANDA'S ONE LAPTOP PER CHILD PROJECT

Unlike most developing countries, Rwanda has made significant investments in information and communications technology education in schools, consistent with its vision to transform Rwanda into a knowledge-based economy. To this end, various projects like the One Laptop Per Child were launched. It was officially started in 2008 and aims at providing to a range of students in Rwanda, including upper primary school pupils for early access to computer skills while expanding their knowledge on specific subjects like science, mathematics, languages, and social sciences.

Source: Buhungiro 2014.

its ranking in mobile broadband computer-based (149), in the mobile cellular sub-basket (158), and finally in the fixed broadband sub-basket (177). Entrepreneurship (discussed below) also impacts domestic uptake and use of ICTs in Rwanda.

ICT services costs are also relatively high for many of Rwanda's population. Most of the country's connectivity is still through 2G and 3G connectivity (GSMA Intelligence 2018).¹¹ Rwanda has adopted a unique wholesale model for the nationwide deployment of 4G/LTE services with a single provider. In 2013, the government entered into a 25-year joint venture arrangement with an investor to design and deploy a 4G/LTE network utilizing the optic-fiber backbone that the government had built and exclusive allocation of 4G radio spectrum. The 4G network is now complete, enabling unparalleled geographic coverage for a country at Rwanda's level of development, but prices reportedly remain too high for both wholesale customers and retail consumers, resulting in low uptake. The high cost of broadband further places the 4G/LTE services beyond the reach of most private users. Increasing investment in downstream, ICT-enabled sectors and the profitability of mobile services deployment in rural areas has the ongoing focus of the government.

In this regard, the Rwandan government has requested for the World Bank Group's support to analyze and address key barriers to network utilization and to increased private sector investment and affordability of ICT services more broadly. Specifically, the potential engagement will involve: (1) an analysis of the pricing structure and strategy for wholesale services on the 4G/LTE network, (2) an analysis of business models and potential restructuring options to be considered, and (3) support for the development of infrastructure sharing policies and regulations and other measures to reduce the cost and time for ICT infrastructure deployment.

In addition to helping optimize the 4G/LTE network, the Ministry of ICT and Innovation (MINICT) has also expressed an interest in positioning Rwanda as a flagship country under the Digital Economy for Africa initiative. Accordingly, MINICT has endorsed the idea of carrying out a comprehensive Digital Economy assessment as the first step in this process.

Addressing these domestic issues will be instrumental in achieving the goals of having ICT contribute to solving domestic problems and achieving development goals in different sectors throughout the economy, as well as for becoming an exporter of ICT and ICT-enabled services.

Recommendations and policy interventions:

- Strengthen the regulatory framework on the single wholesaler of wireless broadband and access to the radio spectrum for wireless services to ensure quality of service and cost-based prices that encourage the use of the network.
- In the medium term, develop a policy to manage, allocate, and price radio spectrum in order to allow operators to deploy new wireless technologies for broadband access.
- Local content development will provide incentives for people to go online, increase awareness and attractiveness of the Internet, and create new business opportunities domestically.
- Expand basic ICT literacy and user skills through the use and availability of more ICTs in schools and target the training of adults who are out of school and do not work in the public sector.

New opportunities for private investment are found in sectors where land access is very important, including agribusiness and housing. Rwanda has made important progress on land. Globally, Rwanda is one of the top performers in land registration. By 2012, Rwanda completed mapping of all land parcels in the country and had prepared 8 million titles; of these, 7 million titles had been collected by mid-2017 (Schreiber and Bayisenge 2017). Land registration requires only three procedures taking seven days to complete, and the system is fully digital.

Land is scarce in Rwanda, and limited access to land could crowd out private sector participation and investment going forward. Expansion of cultivable land was a major contributor to output growth following the mid-1990s but is no longer an option. Having doubled since 1994, Rwanda's population density stood at 471 people per square kilometer in 2015—the highest on the continent.

Access to serviced land is a major constraint for firms and is often raised as the biggest challenge by foreign investors looking to set up operations, according to the recent survey of potential investors undertaken by the World Bank (World Bank 2018). Access to land is primarily deemed an obstacle to business growth for 48 percent of the respondents. In most sectors, companies typically require access to serviced land near an urban center where they can get skilled labor. The Special Economic Zones (SEZ) program addresses this constraint in the short-term. However, due to overall scarcity of land the opportunity costs remain high. Access to agricultural land is a serious constraint for investors looking to undertake large-scale farming.

Different aspects challenge land consolidation for private investors to access land. First, landholdings are small. Second, there is little government-owned land. Third, land is the economic livelihood for many households. In rural areas, subsistence agriculture is dominant and there may be few alternative economic opportunities. In urban areas, there may be few alternative housing options. These issues are taken up in more detail in each of the deep dives. Fourth, land allocation, agglomeration, or compensation mechanisms are often nontransparent with limited public information on land transactions—a key feature of functioning land markets.

Recommendations and policy interventions:

- Ensure that the land registration system is kept up to date and information on land transactions is made publicly available.
- Implement land assembly instruments (in addition to land banking) to ensure land availability over the medium term.

Enabling Environment

The enabling environment matters for firm entry and firm growth, and Rwanda has made remarkable progress in improving the enabling environment governing the private sector. Efforts include governance, trade policy, and the investment climate.

Rwanda has strong governance. Among potential international investors, the perceived strength of Rwanda is political stability/safety (38 percent), economic growth (28 percent), and ease of doing business (24 percent). International rankings place Rwanda at the average level of middle-income countries. Particularly strong performances are on indicators of government effectiveness, control of corruption, rule of law, and regulatory quality. However, Rwanda's ranking on voice and accountability remains below that of its regional and low-income peers (see chapter 6 of World Bank 2018).

Rwanda undertook significant trade reforms in the 1990s, and tariffs were reduced considerably. Accession into the EAC's Common External Tariff in 2009 helped bring down tariffs further and reduced average tariff rates from 16.5 to 11 percent. It also helped reduce NTBs in goods trade.

Remaining barriers to trade and investment typically stem from the discretionary administration of laws and regulations, and the inconsistent application of rules. Investor surveys point to recurring concern over the inconsistent application of investment-related laws and regulations (U.S. Department of State 2017). Reported challenges include delayed government payments, changes in memorandum of understanding conditions, changes in tax assessments, and difficulties in bringing in foreign talent (export.gov 2017). A more streamlined coordination between various agencies involved in the investment life-cycle can work to overcome these challenges, pointing to the need for a single-window approach to the provision of investment facilitation services. Some barriers also remain in services trade, particularly around movement of professionals. For example, regional standards for services professionals are not harmonized, such as accreditation requirements (above).

There is some concern around rising debt levels, which will need to be monitored. In the past, external grants have played an important role in financing public investments. More recently, external borrowing has become an important source, which led to a relatively large debt accumulation between 2013 and 2017. As discussed in the 10th Rwanda Economic Update, there is

evidence that returns from public-led investments in the past couple of years have been low, alongside slowing economic growth.

Recommendation and policy intervention:

- Educate the public and private sectors on the services regulations and enforce their implementation.

Since the mid-2000s, the business environment became the focus of the government. Thanks to an aggressive reform campaign, Rwanda has been rapidly climbing the rankings of the World Bank Group's Doing Business Report, which measures the ease of doing business in more than 180 countries around the world reaching 41st ranking in 2018 from 150 in 2008. Major successes were achieved in areas such as opening a business, insolvency regulation, labor code, trade facilitation, taxation, among others. Only 3 percent of companies saw the risk of expropriation as a key weakness, which further emphasizes that investor perceive Rwanda as having a strong pro-business environment for FDI.

Policies and regulations can also affect how resources are allocated across firms. There is evidence of substantial misallocation in the enterprise sector—or the allocation of resources to less productive firms—higher than other countries in the region. A counterfactual scenario suggests significant gains in total factor productivity of over 100 percent in the manufacturing sector if these inefficiencies were to be drastically reduced (World Bank 2018). Competition in markets plays a big role in how resources are allocated between firms.

Considerable scope remains for Rwanda to further improve its pro-competitive regulations and increase competition. The Global Competitiveness Report 2018 ranked Rwanda 108th among 140 countries. The World Bank-Organisation for Economic Co-operation and Development (OECD) product market regulation indicators similarly show Rwanda's mixed performance on various underpinnings of competition.

SOEs, including public-private investment groups in which government has invested along with private investors, are present in many sectors.

Allocating sufficient resources to the RICA and extending its mandate to monitor the impact of SOEs on competition, promoting the principle of competitive neutrality to ensure equal treatment of all investors, and removing regulatory barriers to entry and rivalry in input sectors would improve the competition framework (World Bank 2018). In addition, there are questions about SOE performance in terms of adequacy of investments in needed production capacity, consistency with good commercial practices, and negative fiscal effects from Treasury subsidies (World Bank 2018). Information gaps exist on which firms are SOEs, where they operate, and whether they have preferential access to key inputs such as land and finance. Their presence originally was intended to solve the issue of there not being a private sector. However, these information gaps may also create investment uncertainty.

SOEs are a policy decision. SOEs are needed to compensate for market failure. The normal reluctance of private investors to invest enough in such public goods as infrastructure is one market failure. Another may be low investment capacity among Rwanda's private sector. In addition, SOEs may also play a useful role in helping maintain social and political stability in Rwanda. However, if the government still sees a role for SOEs to play, a right balance with private sector will have to be found, for example the government withdrawing gradually from productive activity through ongoing privatization of SOEs such as community processing centers.

Implementation of new laws and the removal of the remaining regulations that restrict competition are continuing challenges. For instance, the organizational and operational procedures relating to the mandate, staffing, and constitution of the board of the Rwanda Inspectorate and Competition Authority (RICA) are still to be finalized. RICA's organizational structure has been approved by cabinet, and the next step is to appoint RICA management. As a result, this important government agency is still not yet functional. Furthermore, the competition law has not yet been enforced because RICA is not operational yet and therefore uncompetitive practices such as agreements among competitors and abuse

of dominance are not discouraged and could be affecting key sectors.

The way that Rwanda enters into PPPs in key infrastructure sectors is problematic and also creates issues for competition. The regulatory framework is protective of incumbents in key input sectors, with especially high barriers to entry in network industries, such as telecommunications (4G/LTE as discussed above), and electricity. In some input sectors (air transport, professional services, public procurement, for example), regulations enshrine different treatment of foreign providers with the aim to promote local made products and services, which discourages free competition based on merit. There is free entry for both local and foreigners, with 15 percent given to goods or suppliers produced or manufactured in Rwanda during the procurement of goods and services. Furthermore, international tenders for public procurement allow for preferences that have not been clearly stated. A new law governing public procurement, however the law does not set the thresholds to apply exclusive or local preference and the default is to apply these preferences unless the procuring entity provides an explanation.¹² The unsolicited nature of most PPPs and their fiscal contingencies may result in loss in value for the government. This situation is set to improve after adoption of the recently enacted PPP law.

Recommendations and policy interventions:

- Continue reforming SOEs and redefining their role in the economy by strengthening corporate governance through the adoption of the OECD's guidelines on corporate governance of SOEs, supported by both OECD and non-OECD countries.
- Decide on appropriate SOE involvement within each sector. For each sector with one or more SOEs, the government (perhaps with development partner support) should evaluate the extent of competition within a sector, the relative competitiveness of SOEs versus private enterprises, significant social considerations, and long-term economic development goals.
- Competition issues could be addressed in the short term by guaranteeing technical and independent decisions by the RICA and availability of enough resources for competition law enforcement once it starts functioning. Strategic actions by the RICA should include identifying regulatory obstacles to entry, expansion and competition in key sectors, and advocate for reforms.
- Leverage private finance in support of infrastructure investment by finalizing and approving the PPP Guidelines to create the enabling framework for PPPs and developing a PPP pipeline through a clearly defined project screening process.

4

GOVERNMENT STRATEGY TOWARD THE PRIVATE SECTOR

Envisioned in Rwanda's new Vision 2050 is a vibrant, competitive, and innovation-driven private sector as an engine of growth. A vibrant private sector was one of six pillars of the Vision 2020 that established the broad aim of transforming the country from a "subsistence agriculture economy to a knowledge-based society," backed by competitiveness to prosper in national, regional, and global markets. The new 30-year Vision for the period up to 2050, which is currently being finalized, focuses on five priorities, including transformation for prosperity.

The core of transformation for prosperity is developing high-value and competitive sectors. While maintaining fundamentals, Rwanda's efforts are now focused in targeted and strategic private sector growth, accelerating high-value sectors in services, agriprocessing, construction, and extractives (box 4.1).¹³

Rwanda's second Private Sector Development Strategy sets out a new and ambitious approach to private sector development and competitiveness improvements, namely a "value-chain (VC) approach." Supporting Rwandan firms to integrate into the supply chains of large domestic and international firms is seen to be the most effective and efficient way to increase their productivity, technology, and competitiveness.

Achieving these priorities, however, is seen to start with the competitiveness of individual firms and their value chains, by prioritizing sectors where interventions are seen to be highest.¹⁴ This new VC approach aligns with the new Made in Rwanda Policy, which aims to increase demand for and boost the production of high-quality, durable, safe Rwandan-made products that are competitive both domestically and on export markets.¹⁵



BOX 4.1 FIRST NATIONAL STRATEGY FOR TRANSFORMATION AND PROSPERITY

The implementation instrument for the remainder of Vision 2020 and for the first four years of the journey under Vision 2050 will be the National Strategy for Transformation. Three pillars form the basis of the continuing drive toward Rwanda's transformation and prosperity: economic transformation, social transformation, and transformational governance.

The overarching objective of the economic transformation pillar is to accelerate inclusive economic development founded on the private sector, knowledge, and Rwanda's natural resources. These objectives will be delivered through key priority areas and interventions:

- Create 1.5 million decent and productive jobs for economic development;
- Accelerate sustainable urbanization from 17.3 percent (2013/14) to 35 percent by 2024;
- Establish Rwanda as a globally competitive knowledge-based economy;
- Promote industrialization and attain a structural shift in the export base to high-value goods and services with the aim of growing exports by 17 percent annually;
- Increase domestic savings and position Rwanda as a hub for financial services to promote investments;
- Modernize and increase productivity of agriculture and livestock; and
- Promote sustainable management of natural resources and environment to transition Rwanda toward a carbon-neutral economy.

5

SCANNING FOR MARKET POSSIBILITIES

In which sectors is there a role for the private sector to advance the country’s development objectives? What are the key constraints for creating market opportunities in these sectors? The “sector scan” assesses creating market opportunities in all economic sectors¹⁶ along two dimensions: potential for development impact (if private investments were made in the sector) and feasibility (if the identified constraints, including sector-specific ones, can be removed within three to five years). The findings inform where market *possibilities* exist in each sector, and where more concrete market *opportunities* exist in some sectors, to guide the choice of the CPSD deep dives.

Objectives and Approach

The sector scan is founded on four questions of feasibility and potential for development impact:

- What is the potential impact of the sector’s output growth on the country’s development objectives?

- What is the sector’s current performance in terms of output quantity and quality, and how does it contribute to development impact?
- Under current conditions in the country, is profitable and transformative private sector activity in the sector feasible? If not, where are the constraints? “Transformative” in this context refers to private sector activity that is not primarily enabled by economic rents, for example, in the context of a highly protected or closed sector.
- To what extent can conditions in the country be improved within a limited time horizon of three to five years to make profitable and transformative private sector activity in the sector feasible?

Different dimensions of feasibility and development impact are considered (box 5.1). For each sector and for each category of feasibility and development impact, a score was given ranging from 1 (lowest) to 5 (highest). For the development impact dimension, the scan assessed the impact of scaling of private sector investment toward the

BOX 5.1 DEFINITIONS OF DEVELOPMENT IMPACT AND FEASIBILITY

Each sector's potential contribution to development objectives is measured across six categories: (1) inclusion and jobs, (2) economic growth, (3) competitiveness and productivity, (4) integration and connectivity, (5) resilience and stability, (6) and environmental sustainability. Each category is weighted according to a subjective measure of its importance, as identified in the Ghana Country Private Sector Diagnostics, with weights of 25, 15, 25, 10, 15, and 10 percent, respectively.

Reform feasibility is scored across four categories: demand, production factors, key inputs, and institutions. Each category is given the same weight. The latter three of these categories contains further subcategories. Production factors are broken down into labor and skills, geography and natural

resource endowment, and existing capabilities. Key inputs are broken down into energy, transport, finance, and intermediate inputs. Institutions are broken down into regulatory barriers, rule of law and property rights, market contestability, macro-economic and political stability.

The four categories of feasibility also correspond to a simple demand-supply-market failures assessment of a sector. The first category measures demand for the sector's output. The second category, production factors, measures supply capacity in the country, including labor, land, and natural resources, and pertinent capital, approximated by existing capabilities. The third category, key inputs, assesses market failures in secondary markets that are of importance to the sector

and might prevent market creation, while the fourth category, institutions, deals with issues that might create market failures in the sector itself.

Feasibility and potential for development impact dimensions can be roughly equated to measurements of the social returns (development impact) versus the risk-adjusted private returns (feasibility) of investment in each sector. A sector needs to score high on both criteria for the private sector to be able to make a meaningful contribution to development objectives. Even if social returns are high, the private sector will not step in unless a sufficient share of the returns can be appropriated by the investing firm to generate a profit.

country's development objectives. A low value indicates therefore a low impact on the development objectives. For the feasibility dimension, the scan assessed whether each sector's enabling environment (demand and production conditions), according to international standards, is conducive to profitable private sector activities. A low value indicates therefore an environment in Rwanda that is problematic and likely to prevent successful private investments. The individual scores are then weighted to inform an overall assessment of feasibility and potential for development impact, aimed at providing a comparable measure across sectors of the four key questions that the sector scan aims to address.¹⁷

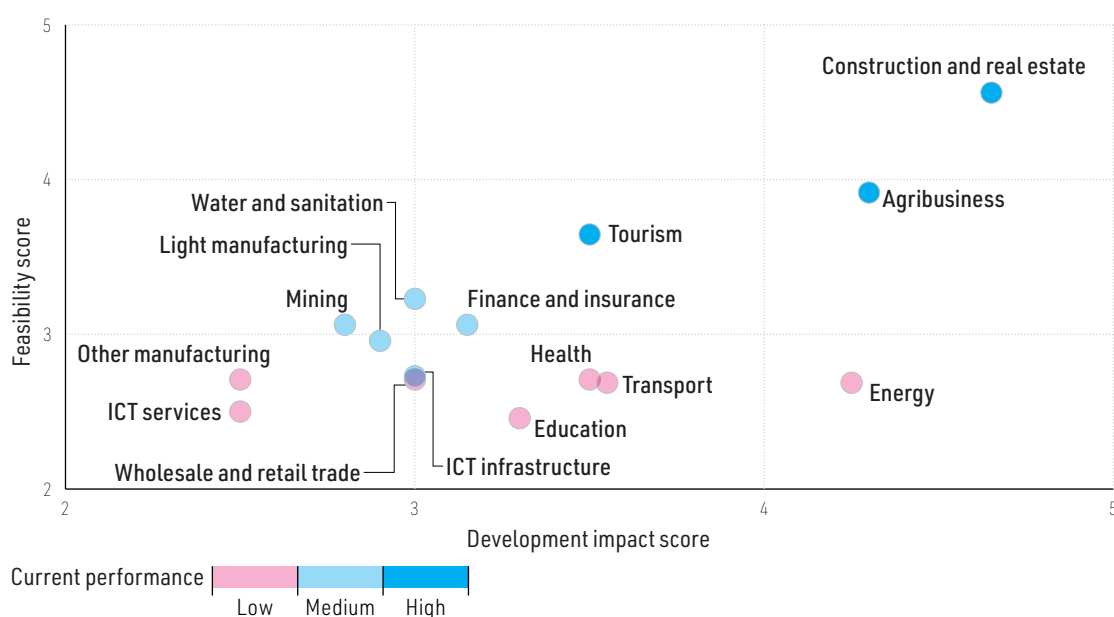
The sector scan used a combination of qualitative and quantitative information to score each of the feasibility and development impact categories. The quantitative input came from different data indicators.¹⁸ In addition to the data indicators, a review of the literature (including existing evidence base) and in-depth interviews with World Bank Group sectoral experts, Rwandan private sector firms, and other Rwandan stakeholders, helped modulate and refine the quantitative assessment.

The CPSD conducted over 100 interviews covering all sectors of Rwanda's economy. The qualitative analysis, in particular, helped assess creating market opportunities given local conditions, global trends, and the impact of sector-specific constraints. The full results of the "sector scan" are presented in appendix C.

Is There a Role for the Private Sector?

OPPORTUNITIES FOR MARKET CREATION

The results of the sector scan illustrate where sectors stand in terms of their potential for development impact and five-year feasibility, shown in figure 5.1. Table 5.1 summarizes the results from the sector scan. The findings highlight three broad categories of sectors: the high development impact sectors in green, sectors with growth potential but limited development impact in yellow, and sectors with below-average direct spillovers on the economy in red.

FIGURE 5.1 SECTOR SCAN RESULTS

Source: Authors.

TABLE 5.1 OVERALL WEIGHTED DEVELOPMENT IMPACT AND FEASIBILITY SCORES

	Development impact	Score	Expected feasibility	Score
Energy	Access to electricity is still relatively low and unequal in Rwanda, with access concentrated in the top two quintiles and limited in the bottom 40 percent.	4.3	There is likely to be an oversupply of electricity unless demand for energy picks up, and this will create huge fiscal contingencies. The RDB no longer seeks new investors in large-scale power generation in the near to medium term. There are significant opportunities for off-grid solutions to those currently not serviced by the distribution networks.	2.7
Water and sanitation	Access to safe water and sanitation facilities has improved in recent times but remains a challenge in rural areas in particular.	3.0	The water sector is a traditionally difficult target for private infrastructure financing, due to constraints on tariff affordability and other complexities of the sector. Nevertheless, private sector engagement for water would be welcomed. In sanitation, scope for private sector intervention along the sanitation service chain (from containment right through to disposal/reuse).	3.2
Transport	Costs to import and export remain high, largely due to Rwanda's landlocked geography and difficult terrain, poor road network particularly the secondary road network, and lack of a rail system that connects Rwanda to the seaports of neighboring countries.	3.5	Rwanda's high international transportation costs stem from its landlocked geography and nonexistent rail links. Storage facilities domestically need investment and improvement, particularly in the agribusiness sector. However, recuperation costs of storage infrastructure may be too high for the private sector.	2.7

(Table continues next page)

TABLE 5.1 (CONTINUED)

	Development impact	Score	Expected feasibility	Score
Ict infrastructure	ICT is an important sector for the GoR, along two of its development objectives: to become a modern and digital economy, and an enabler of exports of ICT-enabled services (for example, BPO).	3.0	Remaining infrastructure gaps may be an opportunity for private investment. However, the sector is challenged by an anti-competitive environment.	2.7
Finance and insurance	Low access to long-term finance and high costs of finance are binding constraints that cut across a number of sectors.	3.2	The high cost of finance reflects not inefficiency of the banking sector but challenges to reach economies of scale.	3.1
Ict services	Development of the sector supports job creation, IT-enabled technology developments, entrepreneurship, and exports.	2.5	ICT-related skills, remaining infrastructure gaps, high infrastructure costs, financing for entrepreneurs, and local content are the key challenges for scaling up the sector in the short run.	2.5
Agribusiness	Given that 70 percent of the population is engaged in mostly subsistence agriculture in Rwanda, agribusiness is a sector with immense opportunity for private sector to grow that will have indirect impacts on poverty and employment.	4.3	Top constraints include access to quality raw material, inadequate farming techniques, skills shortages, a weak domestic market, small farm size, low quality inputs, and access to markets.	3.9
Light manufacturing	These sectors are considered important for Rwanda's future growth and would have important implications for export performance and inclusion through low-skill job creation.	2.9	High transport costs, electricity costs, and import requirements are the main challenges for scaling up investment in the sector.	3.0
Other manufacturing	Development of other manufacturing sectors in Rwanda would have important impacts on exports, growth, and nonagricultural jobs.	2.5	High energy prices, limited access to long-term finance, import requirements, and transport costs challenge Rwanda's international competitiveness in heavy manufacturing.	2.7
Wholesale and retail trade	The sector dominates the composition and growth of the services sector in Rwanda, and is important for jobs, particularly low-skill and female employment.	3.0	The potential for growth is high as Rwanda's middle class grows and urbanization expands. Logistics remain a challenge for the sector (as for other sectors in the economy). Nonperforming loans are also high in the sector, which is likely to constrain credit availability.	2.7
Construction and real estate	With Rwanda expected to be 35 percent urban by 2020, provision of affordable homes is a key element of the country's development strategy, yet Rwanda is missing the affordable housing segment of the sector.	4.7	High cost of construction materials, access to serviced land, few domestic construction companies and developers, financing, and lack of skilled professionals are cited as key challenges on the supply side.	4.6
Tourism	Tourism is concentrated in two main destinations, Kigali (MICE) and the Virungas (gorillas), with potential to diversify tourism offerings by generating investments in other tourism destinations.	3.5	A large number of tourism-focused diagnostics and advisory interventions have been completed or are ongoing by the World Bank Group, as well as other development partners.	3.6
Mining	Mining is an extremely labor-intensive sector in Rwanda and is dominated by artisanal mining. Investment in the sector could modernize mining techniques and result in better (albeit fewer) jobs with higher value addition.	2.8	There are no existing diagnostics or comprehensive geological surveys to underpin new investment (though these are ongoing), and the exact potential of the mining sector is unknown.	3.1

(Table continues next page)

TABLE 5.1 (CONTINUED)

	Development impact	Score	Expected feasibility	Score
Education	Relatively high GDP multiplier effects through the spillover effects of the education into other sectors, and Rwanda's education outcomes are lower than regional and world average.	3.3	Private sector provision of higher education is nascent in Rwanda, a result of Rwanda's small market, small economy, and poor educational outcomes, which limits domestic demand for higher education.	2.5
Health	Large indirect effects through contributions to the overall health and well-being of the population, and Rwanda's expenditures on healthcare are lower than the world average.	3.6	The role of the private sector in healthcare delivery in Rwanda is still developing. Challenges include the ability to pay, insurance coverage for private facilities, reimbursement policies, availability of staff, the cost of importing equipment, and other sector regulatory issues.	2.7

Source: Rwanda CPSD team.

Note: ICT = information and communication technology.

In which sectors is there a role for the private sector to advance the country's development objectives? The results for Rwanda (synthesized in table D.1 in annex D) suggest that creating market opportunities in information and communication technology (ICT) infrastructure, agribusiness, construction and real estate, education, and health would have the largest impacts on inclusion and jobs. Impacts on productivity—another key development challenge for Rwanda—could be achieved by private investment in the energy, transport, ICT infrastructure, agribusiness, construction and real estate, and health sectors. Key sectors for impacting global integration and connectivity, including through trade, as well as foreign investment, are energy, transport, agribusiness, and construction and real estate.

What are the key constraints for creating market opportunities in these sectors? Synthesizing the results from the sector scan sheds new light on the main constraints (both cross-cutting and sector-specific) to productive private sector development in the country. The results for Rwanda (synthesized in tables D.2 and D.3 in annex D) suggest a number of constraints impacting the feasibility of creating markets. Demand (market size), infrastructure (energy), and managerial or entrepreneurial skills are the main cross-cutting constraints affecting the private sector. These constraints are particularly present in energy, water and sanitation, transport, ICT infrastructure and services, other manufacturing sectors (out-

side agribusiness and light manufacturing), and education.¹⁹ Market contestability is also found to be a barrier in Rwanda. Regulatory barriers and macroeconomic and political stability do not appear to be a major constraint for private sector activity. These results confirm the horizontal constraints identified above.

Possibilities for Market Creation

Market possibilities exist across many of Rwanda's sectors. These are challenged by cross-cutting constraints that inhibit concrete opportunities from being realized. For each sector, the sector scan identifies where there is a role for private sector in 3 to 5 years for creating market possibilities, for improving foundational sectors, and growing downstream sectors. It also identifies the key constraints confronting development of that sector.

ENABLING SECTORS

WATER AND SANITATION

One of the main objectives of the GoR's Second Economic Development and Poverty Reduction Strategy and Vision 2020 is to ensure safe, reliable, and affordable water supply services to all of Rwanda's population. The existing system provides reasonably good coverage, and access to clean

water and sanitation for a majority of the population. But gaps between urban and rural access remain, with 25 percent of the population lacking access to safe water sources. Moreover, demand for water and sanitation is rising with the increasing level of urbanization in Rwanda. Relatedly, the sanitation sector is underdeveloped as unplanned urban expansion strains the existing infrastructure, where currently 26 percent of the population lack access to improved sanitation. Other challenges for the sector include high/subsidized end-user tariffs, insufficient distribution networks, and sector inefficiencies, including institutions.

Decreasing fiscal space may constrain continued public infrastructure investments, which would increase space for private investment and PPPs. However, while the 2016 water policy highlights attracting private investment as a key component, it also reiterates the intention to limit private sector investment in rural water supply. Moreover, the water sector is a traditionally difficult target for private infrastructure financing, due to constraints on tariff affordability and other complexities of the sector. Challenges in implementation of PPPs, including limited skills, is also considered a constraint. The government is however undertaking studies to research low-cost water, sanitation, and hygiene (WASH) technologies, an area in which the private sector can contribute significantly in bringing innovations to market. In addition to WASH technologies and waste collection, there is potential for private sector intervention all along the entire sanitation service chain (from containment right through to disposal/reuse).

ENERGY

The energy sector is a critical enabler, but costs and the reliability of electricity challenge competitiveness across Rwanda's economy, particularly manufacturing. The sector is heavily reliant on imports, which account for more than 80 percent of the inputs used by the sector (such as fuel for local electricity consumption). This raises costs significantly.

Moreover, access to electricity is low and unequal in Rwanda, with access concentrated in the top two quintiles and limited access in

the bottom 40 percent. This reflects incomplete distribution networks throughout the country.

There is likely to be an oversupply of electricity unless demand for energy picks up, and this will create fiscal contingencies. The existing supply is based on the government's own projections of growth of the industrial sector, including ambitious expansion targets for electricity generation and access. The government also provides fiscal transfers to the sector to enhance the affordability of electricity service for consumers. The Rwanda Development Board (RDB) no longer seeks investors in energy generation.

However, off-grid electricity will still need to play a large role, as Rwanda wants to have 100 percent access to electricity by 2024 and half of it will be off-grid. Here there is scope for the private sector, but there are many institutional challenges for private provision of off-grid services. These include ensuring a level playing field for all providers, including potential investors from the private sector, to ensure equal competition from private and nonprivate sector alike. The government is working on developing a National Electrification Plan that delimitates priority areas for private-sector driven off-grid solutions and a revised simplified licensing framework for mini grid investors as part of its energy sector reform, which will improve the investment climate in the sector.

The private sector already plays a major role in the power sector. Over 50 percent of generation capacity is owned by around 15 different IPPs. These are both very high numbers in regional comparison. Off-grid, the private sector is already very active.

ICT INFRASTRUCTURE

ICT is an important sector for the GoR, along two of its development objectives: to become a modern and digital economy, and an enabler of exports of ICT-enabled services (for example, BPO). The GoR has invested heavily in ICT infrastructure. The network of fiber-optic cables has been completed across the country and internet penetration is at 55 percent with phone penetration at 81 percent. However, costs are high and uptake of 4G remains low. Last mile connectivity is very

low, which creates a gap for people to have access to data. Low access to electricity, international internet bandwidth, and limited availability of secure internet servers also hold Rwanda back.

While clearly a challenge, these remaining infrastructure gaps may be an opportunity for private investment. However, the sector is challenged by an anti-competitive environment. There is a quasi-monopoly around 4G/LTE, resulting from a joint venture between the GoR and a Korean company (kt Rwanda Networks), which developed the infrastructure with a guarantee of exclusive access to both the fiber-optic network, as well as the 4G/LTE for 25 years. Although this helped attract private investment in the sector due to the country's small market, it is contributing to high costs, low uptake, and potentially reducing future investments.

TRANSPORT

The transport sector is a critical enabler, particularly given Rwanda's landlocked location and reliance on imports for consumption, as well as inputs for production. Improvements in logistics have been a top policy priority for GoR, with Vision 2020 emphasizing the need to maintain road infrastructure and extend regional transport links through rail and air. The World Bank has also been involved in supporting the government with other trade facilitation measures at the border. However, costs to import and export remain high, which challenges competitiveness across many sectors in Rwanda, particularly manufacturing. This is largely due to Rwanda's landlocked geography and difficult terrain, poor road network particularly the secondary road network, and the lack of a rail system connecting Rwanda to the seaports of neighboring countries.

There is currently a massive investment in feeder roads nationwide, supported by multiple development partners. The focus on feeder roads ties into key sectors of the economy, for example, mining and agriculture, and with government strategy for economic development efforts are also underway to develop networks in the central (through Tanzania) and northern corridors (through Uganda and Kenya). However, storage facilities domestically need investment and improvement,

particularly in the agribusiness sector where perishable products and significant postproduction losses are reported that impact competitiveness, providing opportunities for private investment or public-private partnership.

FINANCE AND INSURANCE

Financial inclusion has increased recently, and products have become more diversified. But challenges remain. Low access to long-term finance and high costs of finance are binding constraints that cut across a number of sectors. The high cost of finance does not reflect inefficiency of the banking sector, but challenges to reach economies of scale. The availability of long-term finance depends on the depth of financial and capital markets, and regional and international flows of funds, as well as the legal and regulatory framework of the financial sector. Capital markets continue to be underdeveloped.

There are opportunities in the fintech space in Rwanda, with the government investing in an integrated payments-processing system and a policy emphasis on scaling up the use of digital payments. Foreign investment in the banking sector is also on the uptick with the entry of the Bank of Morocco and other investors.

EDUCATION

Rwanda has made some progress on the education front, with increased provision of services, primarily by the government. The government's Education Sector Strategic Plan includes a special focus on quality of education and the Forward-Looking Joint Sector Review of Education 2017/18 highlights the need to maintain investments in quality and boost engagement on science, technology, engineering, and math.

Private sector provision of higher education is nascent in Rwanda. In part, this is a result of Rwanda's small market, small economy, and poor educational outcomes, which limit domestic demand for higher education. Fees are high as a result of low scale economies. Low incomes also challenge fees that individuals can pay, with limited ability to lend from banks for educational expenses. Nonpublic institutions for higher education in Rwanda today prevail largely with the

support of development partners. This sector is not considered a short- or medium-term area for private sector engagement. Potential for private sector to participate in skills development through the technical and vocational education and training system, however, may provide more of an opportunity.

HEALTH

Rwanda's expenditures on healthcare are higher than the regional average, at 7.5 percent of GDP, but are lower than the world average of 10 percent. Financing for the health system comes from different sources: budget transfers, mandatory insurance coverage, and donor contributions. Domestic spending comprises the majority of health spending (62 percent), with funding from abroad filling the gap. The government is also the largest buyer of healthcare in the country and government expenditures are only slightly lower than out-of-pocket health expenditures. The role of the private sector in healthcare delivery in Rwanda is still developing.

While there is interest in supplementing government provision of healthcare with private sector services, and there are several private entities, such as labs that deliver health services, the overall number of providers remains small (there is one large public-private hospital in Kigali, King Faisal Hospital). Private health insurance, in particular, is underutilized. Challenges include the ability to pay, insurance coverage for private facilities, reimbursement policies, availability of staff, the cost of importing equipment, and other sector regulatory issues. It is unlikely that scope to scale up private sector investment in health will exist within a three-to-five-year timeframe in Rwanda.

TRADED SECTORS

ICT SERVICES

ICT is a priority sector for the GoR, and significant investment in ICT infrastructure has been made with the goal of increasing ICT adoption domestically, as well as supporting ICT-enabled services exports. The GoR is in the process of securing private finance to develop a Kigali Innovation City, which aims to bring together higher educa-

tion, research institutions and the private sector. A national research and innovation fund is also being established to stimulate development of the sector. Development of the sector supports job creation, information technology-enabled technology developments, entrepreneurship, and exports.

The prospects for scaling up of the sector to achieve both outcomes are confronted by a number of challenges, including on the demand and supply sides. Most notable are ICT-related skills, remaining infrastructure gaps, high infrastructure costs, financing for entrepreneurs, and local content.

TOURISM

Tourism has been a significant driver of services exports and growth, as well as foreign direct investment (FDI) and jobs, and is the largest forex earner. Tourism is concentrated in two main destinations, namely Kigali (meetings, incentives, conferences, and exhibitions) and the Virungas (gorillas), with potential to diversify tourism offerings by generating investments in other tourism destinations. The RDB is now the regulator of the tourism sector and is responsible for issuing tourism establishment licenses and grading of establishments. The World Bank Group has been providing technical assistance to support the effectiveness of the tourism department, which is the regulatory agency.

A large number of tourism-focused diagnostics and advisory interventions have been completed or are ongoing by the World Bank Group, as well as other development partners. These include exploring the potential to diversify tourism offerings by generating investments in other tourism destinations such as Karongi, Akagera National Park, and Nyungwe, as well as supporting the development of the regulatory agency and implementation of laws on standards to regulate the sector. Diversified tourism is an emerging priority in the preparation work being undertaken for Vision 2050.

LIGHT MANUFACTURING

Food and beverages, textiles, and industrial and consumer goods are the most prominent subsectors in the light manufacturing sector in Rwanda. Private investment in the light manufacturing sector

(outside of agribusiness) in Rwanda is small, but the country has received some new FDI in the sector of late, including in apparel, footwear, handbags, electronics, and, most recently, automotive. These subsectors are considered important for Rwanda's future growth and would have important implications for export performance and inclusion through low-skill job creation.

Rwanda has made strides in improving business environment and is facilitating access to industrial land and inputs through the development of special economic zones (SEZs). High transport costs, electricity costs, and import requirements are the main challenges for scaling up investment in the sector. Skills are also a reported challenge, where inadequately trained staff was cited as a major constraint by 28 percent of manufacturing firms in the Enterprise Survey.

OTHER MANUFACTURING

At present, manufacturing value-added constitutes slightly more than 6 percent in Rwanda, compared with nearly 10 percent in Sub-Saharan Africa (World Bank 2018). According to the Rwanda Development Board, the aim is to boost this sector's contribution to GDP to 26 percent by 2020. Toward this end, the government has established a SEZ and four industrial parks. Development of other manufacturing sectors in Rwanda would have important impacts on exports, growth, and nonagricultural jobs.

The sector faces important challenges in the near to medium term. Importantly, high energy prices, limited access to long-term finance, import requirements, and transport costs challenge Rwanda's international competitiveness in heavy manufacturing. In this subsector, export competitiveness to operate on scale is essential for its development, which is challenged by Rwanda's small domestic market and limited purchasing power of much of the population. Skills gaps may also challenge higher-sophisticated manufacturing sectors.

MINING

Mining is a highly labor-intensive sector in Rwanda and is dominated by artisanal mining. Outdated mining techniques result in poor and hazardous working conditions. The current technologies

used for mining also result in low value addition, where much of the ore is not extracted from the rock and is discarded. Moreover, the ore that is extracted is subsequently exported in unprocessed form. Mining is considered by the GoR to be an increasingly important sector for growth in the coming years. With the establishment in 2017 of the Rwanda Mines, Petroleum and Gas Board, the government projects a significant increase of the mining sector's contribution to GDP and exports. A government target of increasing mining revenues from \$100 million to \$1.5 billion by 2024 has been set. Any potential increase would materialize only from new investment in the sector and the government is actively seeking to attract FDI into the sector.

Investment in the mining sector could modernize mining techniques and result in better (albeit fewer) jobs with higher value addition. However, there are no existing diagnostics or comprehensive geological surveys to underpin new investment (although these are ongoing), and the exact potential of the mining sector is unknown. Challenges for the sector also include overall low efficiency/productivity, institutional and legal environment issues, limited understanding of investment attraction and promotion, and currently low value addition in the sector. These gaps are compounded by a lack of intergovernmental coordination and insight into the potential environmental impact.

AGRIBUSINESS

Agribusiness is a highly desirable sector across a number of dimensions. Given that 70 percent of the population are engaged in mostly subsistence agriculture in Rwanda, agribusiness is a sector with immense opportunity for the private sector to grow that will have indirect impacts on poverty and employment. It is important for inclusive jobs, not only through backward linkages with farmers, but also by supporting better jobs in the processing sector. It also shows up strongly for growth, value addition, competitiveness, and productivity.

Top constraints include: access to finance, access to quality raw material, inadequate farming techniques, skills shortages, a weak domestic market, small farm size, low quality inputs, postharvest

infrastructure, low mechanization, and access to markets. Many of these constraints are in areas in which private sector investment could help within the short term. However, institutional challenges also exist in agriculture due to the GoR's major involvement in the sector and will require upstream reforms.

NONTRADED SECTORS

WHOLESALE AND RETAIL TRADE

Retail and wholesale trade dominates the composition and growth of the services sector in Rwanda, which grew 19 percent in the last quarter of 2017. As the result, the sector created the largest number of new jobs between August 2016 and August 2017. In 2014, Rwanda was ranked as the top retail destination in Africa. However, the sector as a whole remains underdeveloped compared with other emerging markets, and there is a limited presence of international brands. The sector has low production capacity utilization and uses the least proportion of Rwandan raw materials, and accounts for less than 9 percent of exports. It also comprises more than half informal enterprises and more than 40 percent of employment in the informal sector. The potential for growth is high as Rwanda's middle class grows and urbanization expands.

Local traders dominate the sector and are mainly informal, reflecting low barriers to entry. This reflects high rents and high regulations in organized retail. For example, zoning is an issue in Kigali, with tight regulations in the city center about where economic activity can happen. This pushes new development to the peripheries and outside the city borders, where regulations are more relaxed or not enforced as strongly. It also raises costs for small businesses to comply. Logistics also remain a challenge for the sector (as for other sectors in the economy). The sector is highly sensitive to changes in inflation. Nonperforming loans are also high in the sector, which is likely to constrain credit availability.

CONSTRUCTION AND REAL ESTATE

The commercial real estate sector and high-end housing sector has seen strong growth in the past years, and the construction sector has been an important driver of growth in Rwanda. However, Rwanda is missing the affordable housing segment of the sector, where currently the segment does not feature strongly in the construction and real estate sector. With Rwanda expected to be 35 percent urbanized by 2020, provision of affordable homes is a key element of the country's development strategy, and is the segment with the highest expected demand, and much market potential. Creating this space is a top priority for the government. Initiatives to increase investments in the real estate development are critical to help bring more houses onto the market, particularly targeting the low market segment. Thus, the sector exhibits high potential for development impact in terms of jobs, growth, backward linkages, and inclusion.

The high cost of construction materials and low supply are major obstacles to supplying affordable housing. Access to serviced land also challenges the real estate sector. There are few domestic construction companies and developers with the capacity to provide large-scale housing projects, or financing for domestic construction companies. A lack of skilled professionals is also cited as a challenge on the supply-side.

Three business sectors—**agribusiness, housing, and tourism**—show concrete opportunities for market creation in a three- to five-year timeframe. These sectors were identified during the sector scan to be both highly feasible with high potential for development impact, in particular for job creation through private sector activity. They could also add significant value to our current understanding of opportunities and constraint for private sector investment. Agribusiness and housing were chosen for deep dives in the CPSD, with future studies focusing on tourism.

6

DEEP DIVES FOR MARKET OPPORTUNITIES

Agribusiness

The backbone of Rwanda's economy, agribusiness is crucial for growth and poverty reduction. Rwanda's natural endowments give it a comparative advantage in many crops where it is competitive on cost and/or quality. Key crops are tea, coffee, beans, grains, cassava, fruits, and vegetables. The sector is challenged by land constraints due to population pressure, poor water management, and small average land holdings. Limited commercialization constrained by poor access to commercial and financial markets, and public and private capacity also challenge the sector. Rwanda will need to overcome some critical constraints in logistics, agricultural inputs, postproduction facilities, transport, and electricity, among others, for the sector to reach its full potential. With its small domestic market, small land holdings, and the lack of significant specialized farming, Rwanda should seek to maximize its access to regional and international markets with a strategy that includes strong national branding, internationally-trusted food safety institutions and regulations, strong National Quality Infrastructure, and easy trade. As always, Rwanda should ensure that investments agribusiness support the Principles for Responsible Agriculture Investment,²⁰ which advance respect for rights, livelihoods, and resource in agriculture-related investments.

INTRODUCTION AND SECTOR CONTEXT

Agriculture remains one of the most important sectors for Rwanda from an economic, as well as a social, standpoint. The sector accounts for 39 percent of GDP, 50 percent of goods exports (or 25 percent of total exports), 65 percent of

foreign-exchange earnings, 80 percent of employment, and 90 percent of the country's food needs.

Agriculture in Rwanda is dominated by small-scale, subsistence farming based on traditional, rain-fed practices. Land plots are very small; 80 percent of land holdings are less than one hectare and often divided into three or four plots. Over

70 percent of agricultural land is either on hills or on the side of hills, and less than 2 percent of land is under irrigation. Shocks due to weather and rainfall, together with pests and diseases, cause sharp fluctuations in production and yields.

As a result, the productivity is low, holding back the sector’s contribution to development. Rwanda’s rural poverty rate of 49 percent soars to 76 percent for families whose main source of income is from agriculture.

The state has focused on areas of agricultural development, most strongly on staple foods. About 86 percent of agriculture GDP comes from food crops, generally not grown commercially or for export (figure 6.1). There is almost no medium- or large-scale production for any of the staple crops, except for isolated pockets of commercial activity in horticulture and sugarcane.

For agriculture to work toward Rwanda’s development strategies, it must move up the agribusiness value chain, to a sector that is modernized, efficient, well-integrated, and can produce higher value-added goods for export and add value along the value chain. In the past, Rwanda relied heavily on both input intensification as well as land expansion to support agricultural output growth. Both of these sources are becoming increasingly constrained to deliver the rapid agriculture growth needed to support the overall development objectives of the country. The next growth phase will need to

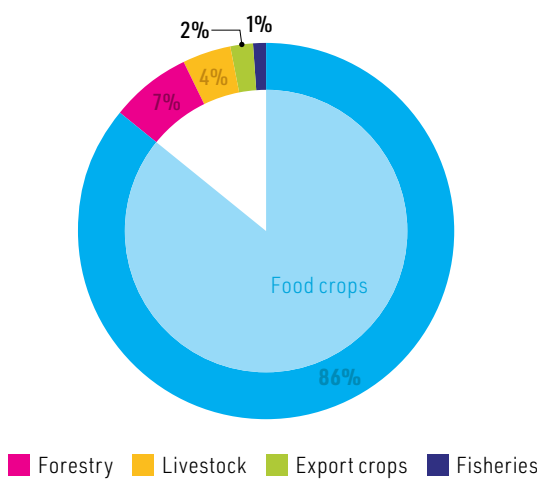
focus on moving up the agribusiness value chain, and to transform the agriculture sector towards increased value-addition, specialization, and trade. This calls for improvements in technical and allocative efficiency as well as technological change to support the increase in total factor productivity that would enable this transformation.

Private sector investment will be central to achieving this transformation, with higher productivity through allocative efficiency, technological progress, and global integration. This is recognized in the government’s Agricultural Development Plan, which advocates for greater investment and growth driven by the private sector in key crops (among other things). This entails significant transformation from where Rwanda is today.

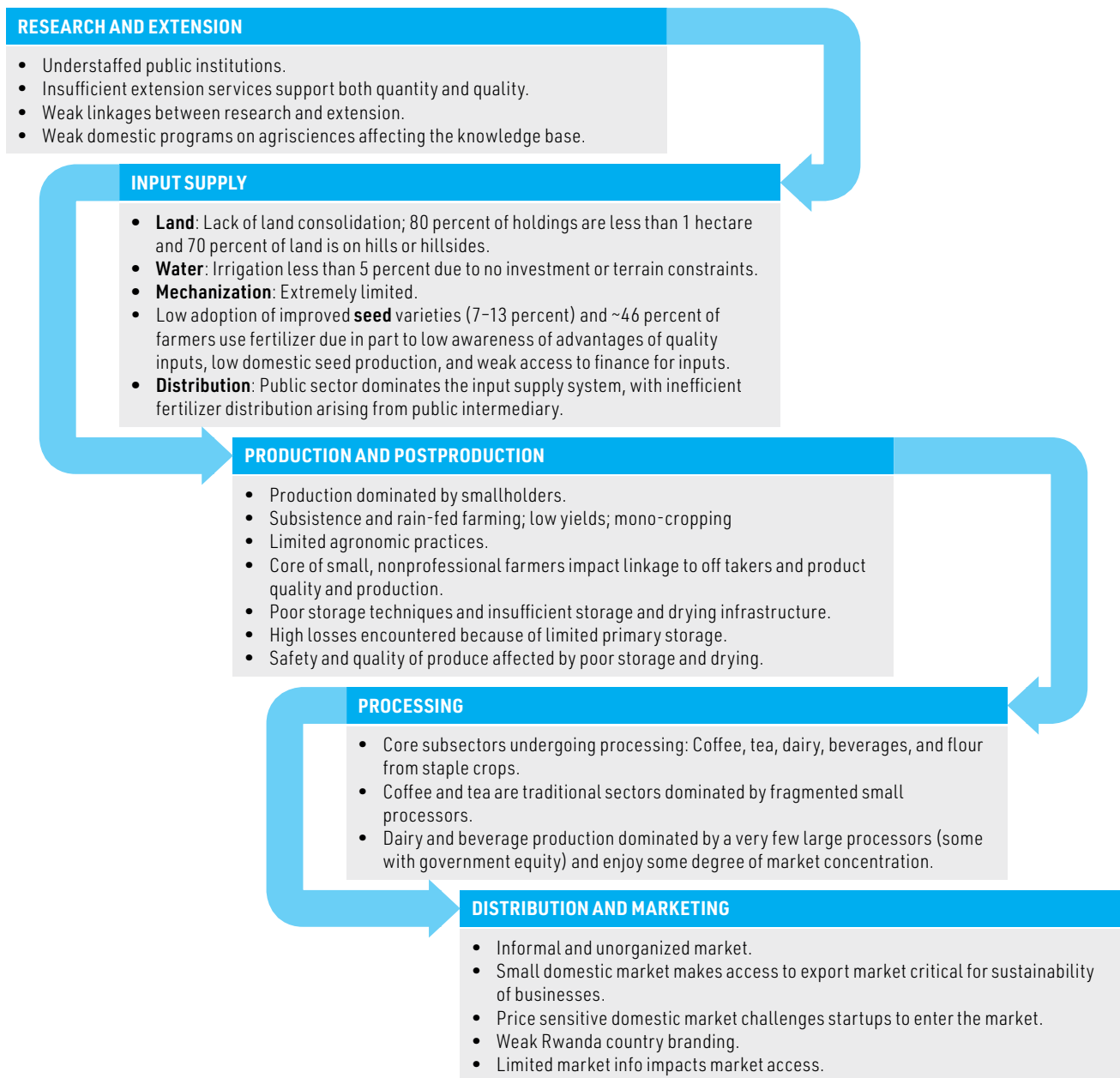
Today, private sector participation is limited across the agribusiness value chain (figure 6.2). Nearly all chemical fertilizers are imported and there are virtually no private seed markets. The state is mainly involved in research and development (R&D), extension services, seed and fertilizer purchase/distribution, and export support through finance and certifications. There is also a small number of larger businesses with significant state ownership (for example, in milk and fruit juice). Services for agribusiness are informal in nature and unorganized across many smaller players. Processing is scattered across products, with little or only nascent competition within certain product categories.

Institutional factors are critical for transforming agriculture and moving up the agribusiness value chain. Structural transformation is typically initiated by policy reforms that open markets, advance trade and increase competition in the agricultural sector. Significant reforms in these areas were made in Latin America in the 1980s and resulted in structural transformation of the Peruvian and Chilean economies, albeit at different rates of reform with Chile moving more rapidly. Lessons learned included the necessity of reforms improving the investment climate, lowering business regulatory compliance costs, promoting competition and exposure to global markets, and creation of tax or other investment related incentives to support private-sector led export-oriented growth.

FIGURE 6.1 COMPOSITION OF AGRICULTURE GDP, 2014



Source: Based on data from FAOSTAT.

FIGURE 6.2 OVERVIEW OF VALUE CHAIN NODES' PERFORMANCE

Source: Rwanda CPSD team.

Lessons from these experiences can be learned for Rwanda. Rwanda's economy is much smaller than Chile's or Peru's, but similar reform initiatives must be considered. Investments in irrigation infrastructure, processing and storage facilities and logistics coupled with support for improved market coordination, value chain integration, and compliance with quality and safety stan-

dards to meet market requirements will benefit Rwanda's agricultural sector and promote structural transformation.

A focus on high-value export commodities destined to regional and global markets is also critical to drive the move up the agribusiness value chain as a source of comparative advantage for Rwanda. Rwanda's small domestic market,

characterized by informal trade and low access to international and regional markets, challenges the sustainability of agribusinesses. Tea and coffee dominate agricultural exports, with small quantities of staple foods (for example, common beans or mushrooms) crossing the borders to neighboring countries (Uganda, the Democratic Republic of the Congo, Kenya, and Burundi), both formally and informally. There are almost no exports of processed foods. Export potential is challenged by a number of domestic constraints, as well as other competitive regional suppliers, such as Kenya.

The CPSD agriculture subsector deep dive identifies both constraints and opportunities to unlock private sector engagement in subsectors with the potential to be competitive and impactful through employment and income generation.²¹ It first identifies constraints that cut across all subsectors along the entire agribusiness value chain, as well as public and private engagement opportunities.

CROSS-CUTTING CONSTRAINTS AND MARKET OPPORTUNITIES

Global experience shows that agribusiness investors have an outsized impact on the sector and should be encouraged. These include lead firms collecting, aggregating, and exporting agrifood products with strong requirements for consistency in supply and quality. They bring good practice, improved market linkages for smallholders, improved professionalism/farming as a business mentality, quality control, and other elements needed to help transform agriculture into agribusiness and move up the value chain.

Many and diverse market opportunities exist in each the different subsectors considered here. Rwanda's counter-cyclical production period to the EU market will help. Rwanda should also explore strategies to significantly deepen (and formalize) its trade with the Democratic Republic of Congo—a market that is large and for which there is significant informal cross-border trade.

But access to international markets will be highly competitive, challenged by a number of issues cross-cutting the entire agribusiness value chain. Competitiveness of the agribusiness sector is largely determined by how productive

smallholders are, how well organized they are to aggregate, and the efficiency of the logistics systems to deliver their products to the respective markets. Coupled with efforts at improved farmer productivity in competitive products, Rwanda can develop a quality niche for its more competitive products on international markets, especially in the horticulture space.

CHALLENGES

INPUT MARKETS

A first key challenge is input markets that have an important impact on productivity, including access to land, and irrigation schemes that support greater yield and consistency of supply for greater value-added. Insufficient, irregular supply and quality of raw materials is the most critical constraint for agribusinesses processors, which seek to work with cooperatives directly to improve yields.

SKILLS

A second key challenge is the low level of skills of farmers and other value-chain actors, which impacts farming management, crop usage, and farm specialization. Addressing the skills shortage in high-level labor and improving effectiveness of research and extension services will be critical in raising the competitiveness of the sector. Government capacity and coordination are also issues. There are pockets of innovation that need targeted support, with a lens on young and innovation during implementation.

TRANSPORT AND ELECTRICITY

A third key challenge is transportation and cold-chain access, which are important in maintaining the quality of Rwanda's exports.

- Rural transportation challenges hinder access to market.
- Weak postharvest crop management and storage generate high levels of losses; 15 percent of the smallholder produce is lost due to poor storage, and also impacts the safety and quality of produce. Storage facilities are very limited. The facilities that exist are either inac-

cessible to farmers or are of poor quality, often lacking drying infrastructure. This negatively impacts larger-scale agribusiness needs.

- Rwanda has the highest transport costs in the region due to inadequate air transport infrastructure, a lack of rail transport, water and pipeline transport, and low capital and maintenance investments. Transport costs are estimated at 40 percent of the value of Rwanda's imports/exports, compared with 12 and 36 percent for Kenya and Uganda, respectively.
- The lack of access to and unreliability of electricity is a major constraint to private investment in the agriculture sector, in particular in the processing segment.

FINANCE

High interest rates, issues of collateral, and limited banking products adapted to farming activities all impede agriculture investment. Challenges in the enabling environment include availability and quality of data and fiscal disincentives. Demand-side challenges include limited financial capability of farmers and producer organizations. Supply-side challenges include limited operational capacity among financial institutions to serve the agricultural sector, and limited availability of medium to long term liquidity.

AGRITECHNOLOGY

In Rwanda, technology services targeting the agribusiness sector are less prevalent than in other regional countries. These include services regarding payments, savings, information on weather, information on soil composition (for ideal fertilizer composition) and other inputs, and access to markets. Here there is a clear role for the private sector, as is occurring in other regional countries (box 6.1). Climate change that results in more climate variability will make these technologies more important in years to come (box 6.2).

OPPORTUNITIES

Market opportunities for the private sector exist along the different nodes of the agribusiness value chain, with other opportunities for government engagement to support the sector.

INPUTS

There is more scope for private sector engagement in **seed and fertilizer distribution**, which is currently dominated by the government. There are also opportunities for the private sector to enhance **soil-testing facilities and production of pesticides**, which currently impede the more widespread adoption of fertilizer.

BOX 6.1 RESOLVING MARKET FAILURES IN AGRIBUSINESS WITH TECHNOLOGY-ENABLED SOLUTIONS

A Kenyan company, Tulaa, is using technology-enabled solutions to link farmers to inputs, finance, and reputable buyers. On the company's platform, a farmer can apply for a loan to buy inputs using mobile technology. If approved, the farmer places orders on the platform for inputs (fertilizers, seeds) and the loan is used to pay input suppliers using mobile money. The application also pushes agriculture-related tips for farmers for free, based on where they are and what they produce. The app is also linking farmers to buyers through brokerage systems.

This mobile technology is resolving multiple problems that farmers face within the supply chain. Many are linked to information asymmetry. For example, banks naturally do not create lots of partnerships with

input suppliers, as it is not part of their business model. Instead, this company works directly with input suppliers, as well as lenders (including banks and microfinance institutions) to negotiate pricing and delivery, to identify customers, and to aggregate them together.

Tulaa is looking to expand across Eastern Africa. The company is currently working in two value chains (tomatoes and potatoes) in Kenya and is looking to expand into new products within the country, as well as to new markets. Ideal markets for this business model are ones where there is a large number of smallholder farmers with mobile penetration and low access to finance.

BOX 6.2 CLIMATE CHANGE AND AGRIBUSINESS IN RWANDA

Climate change is potentially the most consequential global issue. The impact of global climate change is already being felt. Climatic conditions, heat, and other weather extremes considered highly unusual or unprecedented today could become the new normal. These climate trends may impact investment in the future.

The impacts of climate variability today uncover the risks of future climate change for Rwanda's economy. The average temperature of Rwanda has increased over recent decades, at higher levels than the global average, and rainfall patterns are becoming more irregular and unpredictable with shorter rainy seasons. The greatest impact of climate variability is on food production. Rwandan agriculture is mostly rain-fed (less than 10 percent of cultivable land is irrigated), and high rainfall variability makes cereal and export crop production highly vulnerable to climate and weather-related risks. This is compounded by high levels of soil erosion and periodic floods and landslides. In the past, dry spells and prolonged droughts have had major impacts on the economy at large, amplifying concerns over future climate change.

Global climate change poses upstream risks and opportunities in agribusiness. Future climate change is likely to exacerbate the existing impacts of current climate variability in Rwanda, leading to some new risks and potentially some opportunities. Medium-term climate projections for Rwanda indicate that the temperature will increase further, between 1 and 2.5 degrees Celsius by the middle of this century. The projections of future rainfall, though less certain, suggest the high levels of year-to-year rainfall variation will continue. The agriculture and livestock sectors in Rwanda—particularly maize and wheat as well as coffee and tea—will be most impacted as the climate changes, but more opportunities to expand crops into existing and new areas that become more suitable could also arise. The vulnerabilities to Rwandan agriculture from climate change, given from the country's topography and commodity reliance, will need to be managed with climate-adoption policies (discussed in the Agriculture chapter). Development plans and investment strategies in downstream agribusiness sectors would also need to adjust.

The government should work with the private sector to develop models for improved private sector participation in the **management of inputs**. There is a need for the government to move out of direct agricultural activities and privatize these assets and activities to enable more private sector investment and participation.²²

Irrigation would support multiple cropping and economic returns to achieve higher yields and add value. Private sector participation in **irrigation investment schemes**, especially for prioritized value chains, offers other opportunities. Lead firms sometimes invest in farm irrigation if they have a good and confident relationship with farmers (box 6.3).

Access to additional land, especially related to increasing plot size or consolidation, would serve to increase production, but competition for land is strong and increasing acreage of cultivation is more challenging due to limited land availability. The government should review and develop opportunities for land consolidation.

BOX 6.3 SOLAR IRRIGATION SOLUTIONS IN KENYA

SunCulture, a Nairobi-based company, provides an example of how lead firms can identify and support irrigation investment schemes. Since 2013, the company has been helping smallholder farmers in Africa access affordable solar power irrigation solutions, leveraging the Internet of Things. Its objective is to improve both crop yields and quality; and affordable drip and pump irrigation with in-built finance is a core offering.

PRODUCTION

Although there is not much space for commercial farming in Rwanda, **better off-take relationships and more professional cooperatives** by the private sector will improve farmer access to markets and also support more (and better) production.

BOX 6.4 FIGHTING STUNTING WITH IMPROVED FOODS

Like in many African countries, stunting adversely affects human development in Rwanda.^a Combating this problem offers opportunities for private investment in the agribusiness value chain. The African Improved Foods (AIF), a manufacturer of fortified complementary food in Rwanda, is one example.

However, one main challenge for AIF's production is locally sourcing staple crops (mainly corn) because they contain high levels of aflatoxin, forcing AIF to purchase grain from Zambia at higher cost. If crops could be pro-

duced locally with acceptable levels of aflatoxin, AIF and other businesses making complementary foods could do so at lower cost and potentially export to new regional markets. IFC Advisory Services is working with AIF and its food sources to improve practices with the aim to lower levels of aflatoxin. And there is room for more comprehensive projects that not only work with farmers but also with the government in their need to support improved farming practices, test for aflatoxin, and regulations for food safety.

a. Stunting is the impaired growth and development that children experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation. Proper health and nutrition of a child in its first two years have a disproportionate impact on lowering the risk of stunting. Nutrition for children in their first two years generally consists of mother's milk and complementary food.

Strengthening these relationships can also support agribusiness to fight stunting in Rwanda (box 6.4).

There are opportunities of greater government support to the production segment. These include developing incentives for **smallholder-farm aggregation and market linkages**, including contract farming and outgrowers schemes.

PROCESSING

Processing includes mechanization, for example canning or shocking of nuts. **Thrashers, trackers, irrigation systems** associated with production could benefit, but most farmers are small scale and have limited machinery.

On the government side, it should address issues of **packing restrictions** related to nonbio-degradable material for agriprocessors, including an exemption on the packaging ban for domestic agribusinesses competing with imported products not subject to the ban.²³

Access to better and larger markets will drive private investment in processing. These markets are likely to be the EU, the Middle East, the United States, and the Democratic Republic of Congo.

Energy efficiency and/or **off-grid solar** to support processors are also possible opportunities.

TRANSPORT AND LOGISTICS

Improved **access to storage** (cold-storage facilities, along with affordable storage and warehousing) for farmers and agribusinesses, including public- and

private-sector models, is also needed in Rwanda. The government should review costs, quality, and efficiency of the GoR-led agristorage facilities, with an eye to transitioning to a greater management role for the private sector.

There are opportunities for investment in **operator-owned and -hired fleets** that meet the volume needs of horticulture exporters (in addition to investment in transport and logistics generally).

The development of roads and infrastructure is required to further increase competitiveness. There is currently a massive investment in feeder roads nationwide, supported by multiple development partners, but opportunities for more efficient cross-border facilitation also exist.

Overcoming market constraints to exporting will also be necessary. Improved **custom clearing, handling, and processing** at the airport/land borders are needed through support from the government. The government or the Rwanda Inspection and Competition Authority (RICA) should also review freight-forwarding fees to ensure that they are market driven.

BRANDING AND PROMOTION

Branding presents an opportunity to further develop Rwanda's exports and realize a premium by acquiring certifications, adding value to the brands.

Promotion activity by the government needs to be increased to create awareness and presence of products from Rwanda. The government could

also consider the role of **trade representatives** in Rwanda's embassies, in order to support the facilitation of export-market linkages and provide information on investment opportunities.

MARKET INFORMATION AND FINANCE

Agrifinance has a role to play, but Rwanda must also look at ways of also taking greater risks. Opportunities include deepening the **agricultural credit** market and scaling up the **agricultural insurance** market.

On the government side, improved **financial infrastructure** in rural areas that improve access to credit and collateral would also help.

Rwanda should target improved **agritech** market penetration, especially related to savings and payments, agrilimatic information systems, access to inputs, and access to market information.

INSTITUTIONS

The government should improve the **quality and accessibility of agricultural information and data** to support better policy decisions and improved farming, and work with the RICA to support knowledge and application of **agriculture-related food safety health standards**, for example, aflatoxin.

CONSTRAINTS AND OPPORTUNITIES IN SELECT SUBSECTORS

Rwanda has comparative advantages in traditional crops such as maize and cassava, as well as non-traditional crops such as potatoes and beans (table 6.1). The CPSD agriculture subsector deep dive explores five of these subsectors with a view on identifying **impact, competitiveness, and market opportunities** (box 6.5). These consist both of crops that have established export markets (for example, tea or coffee), as well as other crops that have typically been grown for subsistence but now are finding new and growing international markets for their processed product (for example, horticulture, cassava, or sugar).²⁴

Tea, coffee, and horticulture exhibit high international competitiveness, in which increased private sector participation would also have important development impacts. Table 6.2 summarizes the findings of the subsector deep dives. Limited land availability for expanding tea and coffee production will require, first, a focus on quality (rather than quantity) and, second, moving downstream to the processing segments of the value chain. Transformation of horticulture will instead require a focus on distribution (packaging,

TABLE 6.1 CROPS WITH A COMPARATIVE ADVANTAGE IN RWANDA

Crops ranked from lowest to highest DRC in the best performing location	Best performing province	DRC ratio
Irish potatoes	Northern	0.19
Coffee	Western	0.30
Beans (runner)	Western	0.31
Soybeans	Eastern	0.40
Maize	Southern	0.45
Cassava	Eastern	0.50
Wheat	Northern	0.85
Rice	Eastern	1.00

Source: Cambridge Resources International 2017.

Note: Domestic resource cost (DRC) is used as a tool of cost or benefit analysis in less-developed countries to both appraise hypothetical projects and to evaluate the costs of using protection to maintain existing industries. The DRC implies that crops with a low number are more competitive and profitable. It may not, however, capture the greatest income opportunities. There are many factors to consider when looking at profits, including firm efficiency, market demand, and so forth. The choice of subsectors for the deep dive differs from the rank, as other criteria were considered, including impact and markets.

BOX 6.5 METHODOLOGY FOR SUBSECTOR ANALYSIS

Specifically, the agribusiness deep dive looks at the following criteria for each subsector:

- **IMPACT** was determined by assessing the employment generated across production, processing, and distribution. Furthermore, the value of exports of the crop and its impact on the trade balance were taken into consideration, together with the crop's contribution to food self-sufficiency in Rwanda.
- The international **COMPETITIVENESS** of a crop was determined by assessing the import and export parity, as well as the domestic resource cost.
- **MARKETS** targeted were local, regional (neighboring countries of Rwanda), or global. This was determined by the value of sales in the domestic market, the share of value of exports to countries in the East African region, and global exports in the total market value of the crop.

TABLE 6.2 IMPACT, COMPETITIVENESS, AND MARKET OPPORTUNITIES IN SELECT SUBSECTORS

Crop	Impact	Employment	Exports	International competitiveness	Targeted market
Tea	High	++	++	High	Global
Coffee	High	++	++	High	Global
Horticulture	Medium	++	+	High / medium	Global / regional
Cassava	High	++	+	Medium	Global
Sugar	Low	--	--	Low	Local

Note: International competitiveness was assessed on export-import parity and domestic resource cost.

sorting, and cold-chain facilities) and meeting global certification for export growth. Cassava is also a high-impact subsector with some nascent signs of competitiveness in global markets, but transformation will require finding disease-resistant strains and improving processing techniques. *There is a role for the private sector within each of these different transformations.* Sugar, on the other hand, shows low impact and low international competitiveness, with market opportunities limited to the domestic market by way of import substitution, which are available because of high mark-ups on imports resulting from an uncompetitive environment.

TEA**WHERE RWANDA IS NOW**

In the early 2000s, the government of Rwanda led a substantive privatization effort of its tea factories; today, tea is a highly competitive subsector with substantial development impacts in terms of exports

and jobs. Almost 100 percent of tea produced in Rwanda is exported. Valued at \$114 million, tea exports contribute 15 percent to total exports. Much of these go to the United Kingdom, the European Union, the Russian Federation, the Arab Republic of Egypt, and Pakistan. Tea also employs a large number of people. There are 27,000 independent small growers who own about 70 percent of the 15,000 hectares under tea cultivation, with the remaining growing areas owned by factories. Smallholder farmers either harvest their own leaves with family labor or employ pluckers paid at a daily rate. The central importance of pluckers to the tea sector and its predominance of smallholders make tea the third-largest employer in Rwanda.

The subsector's success reflects strong comparative advantage in international markets, underpinned by natural geographic endowments. Newer tea plantations (and younger clones), favorable climate, altitude (1,800 to 2,500 meters), and acidic and rich volcanic soils, provide excellent growing conditions for Rwandan tea. Most tea

produced in Rwanda is black tea with some specialty tea, such as white, green, authentic and organic tea also being produced.

There is some initial processing of green tea leaves before export. There are 16 processors that convert green tea leaves into dried brown leaves. The dried tea is then trucked from the processing centers to the Mombasa auction. There, buyers purchase the tea for onward export to be blended and packaged in the consumers' market (although some blending takes place in factories in Kenya). Only a small share of tea is sold via direct sales.

Despite these advantages, some constraints exist that, in the short run, challenge Rwanda's tea subsector:

- **Input supply.** Low yields are limiting production, with smallholders having more limited access to improved inputs than estate production.
- **Plucking quality.** Picking tea is a delicate task, and the quality and growth of subsequent leaves can be harmed if plucking is done improperly (for example, by plucking too many leaves at a time). Collection techniques, while improving, remain critical to tea leaf quality, whether by farmers or hired pluckers.
- **Limited processing capabilities.** Specifically related to drying tea leaves.
- **High transportation costs.** High transportation costs are an impediment to accessing regional markets (particularly Mombasa) and other international markets, and poor road quality and transport networks (feeder roads) increase the costs of transportation. Border crossings can also be long and costly. This lowers cost competitiveness in export markets.
- **Unreliable energy supply.** Inconsistent power raises costs and lowers competitiveness of the tea processors.
- **Marketing and distribution.** The Rwandan National Agricultural Export Board has launched a national tea brand, which is a very positive step toward adding value. The capacity for branding can be improved so that higher prices can be fetched by tea processors.
- **Land access.** Access to land is cited as a key constraint to production growth by farmers

and factories, but available land for tea expansion is limited. This is because the land that grows tea is of a unique quality, and this land is in limited supply.

ENVISIONED TRANSFORMATION

Tea is a profitable subsector, with high margins and strong demand in international markets. Markets are mainly global, with competitiveness in terms of cost, quality, and consistency of supply. Rwandan tea is perceived as high quality and can fetch a premium of 18 percent over the world price on international markets. The industry is also highly profitable, with an average margin of 25 percent for the processors. This is despite domestic production costs being 36 percent higher than world average production costs, likely due to inefficiencies in production. Domestic and regional markets for tea are very small.

Given limited land availability, moving up the tea value chain should focus on increasing yields through better growing efficiency by improving access to inputs, improving quality through plucking techniques, reducing inefficiencies in the value chain, including better logistics, and increasing direct sales through branding. Low yields are a major constraint considering the limited land availability, but there are opportunities for production increases through intensification and on-farm investments that will improve quality and value. Improved competitiveness can also be achieved by addressing cross-cutting constraints, such as improved transport and electricity access, thus lowering costs and increasing value addition. Additional investment in processing is also an attractive opportunity. Moreover, direct sales, which are lucrative with a \$0.10 premium, are not fully exploited for Rwandan tea.

ACTIONS NEEDED

PRIVATE SECTOR FINANCING

- Private-sector solutions include *working-capital financing arrangements for farmers to access appropriate fertilizers* (short term). Quality improvements, initially high, have stagnated. Yields are high in Rwanda, but there are still yield gaps at the smallholder level that

could be closed with supply-chain access to appropriate inputs that provide scope for increases in productivity. Availability of quality inputs and planting/collection techniques should be improved for higher quality and consistency of production, and higher yields.

- Partnering with cooperatives and aggregators to *move quality assessment closer to the field* (short term). This would ensure that the produce coming off the farm is of sufficient quality. If tea is transported on trucks to the aggregator, lessons that could be learned are lost.
- In the longer term, there may be a market opportunity to *increase direct sales by selling single-blend Rwanda tea*, rather than sending tea to Mombasa for blending. However, this will require branding (see above).
- Given the limited scope to add steps in the value chain, *new factories to increase processing capacity* will need to be set up.

UPSTREAM REFORMS

- *Complete the green leaf price reform to the prescribed 50 percent level* (short term). The government initiated a critical “green leaf price reform” in 2012 to link farmer green tea prices to a percentage of the average price of “made tea” that is achieved in the Mombasa auction (that is, the market price for the end-product). It is important to note that the government does not set tea prices itself, but mandates that a percentage of the final sales price be remunerated to farmers for their green tea leaves. The initial percentage was 30 percent with a prescribed increase to 50 percent, which has been slow to materialize (currently at 40 percent). The regulatory reform of farmer green leaf pricing also includes a bonus for exceeding a quality threshold. There is concrete evidence globally, and also in Rwanda, that the green tea price reform has led to an increase in on-farm investment, and there are suggestive correlations between the improved pricing mechanism with tea quality and production volume of smallholder tea production. In addition, investment in processing also goes hand-in-hand with new incentives for improving quality and productivity on-farm through the

price regulation reform. The evidence of improved plucker pass-through boosting green tea leaf prices reinforces optimism with regard to continuing quality improvements.

PUBLIC AND CONCESSIONAL FINANCING

- *Investment in branding and promotion of Rwandan tea* so that higher prices can be fetched by tea processors.

COFFEE

WHERE RWANDA IS NOW

Similar to tea, coffee supports significant foreign-exchange earnings through exports and highly inclusive growth through farmers’ employment. Coffee plays a major role in the Rwandan economy, involving an estimated 400,000 farmers. Markets are mainly global, with 97 percent of harvested coffee being exported. Europe is the largest importer of Rwandan coffee, followed by the United States and countries in Asia.

Favorable climatic and natural endowments enable the production of high quality arabica and/or specialty coffee. The total area under coffee cultivation is currently 42,000 hectares, with annual coffee production between 18,000 and 21,000 metric tons. This implies a yield of 0.105 hectares per producer and highlights the current lack of economic viability in smallholder-based agriculture to derive a reasonable level of income. Currently, there is a significant yield gap (production loss) that could be closed.

Most (97 percent) of the coffee is exported in raw form (green beans) and processing domestically is limited to washing. The government is actively engaged in the coffee subsector through zoning for washing. The progressive zoning scheme that links farmers to local coffee washing stations (CWSs) has led to the proportion of fully washed high grades increasing (which has since stabilized). This in turn has helped to diminish side-selling and improved the quality and consistency of supply in the subsector. However, the vast majority of CWSs operate below capacity, with a large share operating at below 25 percent. Although this may reflect overbuilding of CWSs, which used to be state-owned but have since

been privatized, it also suggests an opportunity to clean more coffee. Nevertheless, it appears that the privatization of CWSs has not produced effective businesses, as they remain poorly managed with poor facilities.

The coffee subsector continues to face several subsector-specific challenges:

- **Market linkages.** Low incomes result in low incentives for coffee farmers, which limits output and motivation for better organization upstream. It also relates directly to the underutilization of CWSs (also raising unit costs).
- **Processing in CWSs.** Operating and maintenance costs are reportedly high. Many CWSs also suffer from poor management practices and insufficient quality systems and practices, which exacerbate low productivity. Repairs and spare parts for CWS machinery require international expertise, and there is limited domestic capacity for maintenance.
- **High transportation costs.** Ocean shipping is most common for transport coffee.
- **Unreliable energy supply.** This primarily affects CWSs (as most roasting is done near the consumer to assure freshness).
- **Distribution and marketing.** Rwanda's international reputation for high-quality coffee is insufficiently exploited for direct sales to large market movers.
- **Land.** Available land for coffee expansion is limited.

ENVISIONED TRANSFORMATION

Rwandan coffee commands premiums on international markets where the country is competitive in terms of cost and quality. Rwandan coffee generates strong international demand due to its high quality and specialty nature, and it is sold in the more remunerative markets of Europe and the United States. The small regional market for Rwandan coffee consumption is less attractive than the global market, but there is some small and specialized penetration. Rwandan specialty coffee fetches premiums of around 30 percent over the world price averages. Coffee in Rwanda also appears to be a profitable business. Indicative

interview data suggest margins of about 12 percent for processors of specialty coffee, and prices received for cherry in Rwanda are fully 25 percent lower than prices received in neighboring countries.²⁵ Although supply is generally consistent, the current production of coffee cherries does not satisfy global or regional demand.

Given limited land availability, moving up the coffee value chain will necessitate a focus on reducing production losses, with some market potential to increase direct sales and move downstream into processing. Tea and coffee are two examples of truly internationally competitive products of Rwanda, and this competitiveness needs to be exploited. This is in line with the National Coffee Strategy, which is focused on increasing yields and boosting exports. Closing the yield gap and improving yields will depend on better availability and use of appropriate inputs. Addressing cross-country constraints that undermine cost advantages will also be needed, including addressing poor transport networks (feeder roads) and inconsistent power, both of which raise costs. In the longer term, there may be opportunities for investment in downstream processing for roasted and blended coffee exported to regional markets (given that roasting in the coffee sector happens next to the consumer market). Even today, however, producers are actively broadening the scope of their activities, using a range of innovative linkage models (box 6.6). In global markets, comparative advantage in providing certification and increasing direct sales can be further leveraged.

ACTIONS NEEDED

PRIVATE SECTOR FINANCING

- **Invest in professional management for CWSs (short term).** Coffee cleaning stations could be significantly improved, allowing for higher quality product.
- **Invest in working-capital financing arrangements to improve appropriate use of improved inputs (short term).** Capital investment could start immediately but will take some time to be sourced and incorporated into processing.

BOX 6.6 INNOVATIVE LINKAGE MODELS IN COFFEE COFFEE PROCESSORS AND EXPORTERS ARE ACTIVELY BROADENING THE SCOPE OF THEIR ACTIVITIES, USING A RANGE OF INNOVATIVE LINKAGE MODELS

MODEL 1 – Coffee processors and exporters are moving from their core activities of dry milling and marketing processed coffee to also managing wet mills (the majority of which are owned by farmer cooperatives) and providing extension services to farmers and cooperatives. The Coffee Business Center, for example, one of the largest exporters in the country, fully owns two wet mills, with an equity stake in another four, and is planning to expand its network of wet mills to eight by the end of the year.

MODEL 2 – Rwanda Trading Company, the third-largest exporter in the subsector today, is also moving upstream by: (1) entering into exclusive supply contracts with about 40 wet mills in return for financial, technical, and marketing assistance, and (2) by purchasing a wet mill of its own.

MODEL 3 – Firms, with the support of nongovernment organizations such as TechnoServe, are also exploring new business models targeted at creating the right incentives for farmers and cooperatives to produce high-quality coffee. One example of this is the Kivu Arabica Coffee Company, which is trying to promote a service delivery model to farmers and cooperatives that consists of providing a service to cooperatives in exchange for a fee.

UPSTREAM REFORMS

- **Continue price-reform efforts.** Appropriate price incentives are needed to close the yield gap for cherry. The government has reformed the minimum support price for farmers to promote improved quality and consistency of supply. However, it should review minimum farmer pricing to at least comparable regional levels for specialty coffee, where markets pay a premium. Coffee could adopt the innovative pricing schemes used for tea farmers to coffee farmers. Some buyers are already paying above the minimum support price of FRW 260 per kilogram. Improvements in production will also create scope for greater utilization of processing facilities (washing stations) and jobs.
- Improve the productivity and management of CWSs to increase competitiveness by *identifying and reforming trade constraints* related to machinery spare parts.
- *Formulate private public dialogue* around quality strategies and national branding.

- Improve sales and distribution mechanisms through *capacity building of private exporters*. This will help increase regional and global exports, as will ongoing national branding efforts. Branding includes helping them identify and learn how to access markets and learn how to make their products more desirable.

PUBLIC AND CONCESSIONAL FINANCING

- Explore the role of *coffee trees in public land husbandry* (hillside) investments (long-run).
- Support diagnostic of CWS management practices by cooperatives to design/support reform and professionalization of management.
- Support skills gaps in value chain segments, including extension and machinery repair/maintenance (short run).
- Improve transport infrastructure around key growing regions for the costs to be decreased for the processors.
- Facilitate faster and more efficient border transfers.

HORTICULTURE

WHERE RWANDA IS NOW

Horticulture is nascent and growing in Rwanda. The country's mild tropical highland climate and fertile soil makes the country well suited for horticulture production. Among horticulture products, profitable exports have been demonstrated for avocados, hot peppers, chili, eggplant, French beans, bananas, pineapples, and tomatoes, but competitiveness likely exists for other products as well. Smallholder farmers dominate production, with high growth impact of the subsector in terms of employment, incomes, and exports. Around 10 small horticulture firms are exporting (four in floriculture), which aggregate product from smallholder farms through off-takers. Most exports are sold fresh and Rwanda businesses process very little horticulture. One exception is for beans, which are currently being packaged.

Rwanda exports small volumes to both global and regional markets. Most of Rwanda's horticulture exports are destined to the EU market. Formal export volumes are small in regional markets, served by a handful of smaller firms; most of the

cross-border trade of horticulture crop is informal and not well managed at the border.

Smallholder farmers have received considerable public support to date, and the government is firmly committed of increasing horticulture exports. The GoR actively supports access to inputs and provides support services to exporting businesses, including access to finance, international certifications, and transportation. Its most impactful initiatives include: The Export Growth Facility, which supports access to finance and various international certifications; subsidized airfreight rates on RwandAir for some exporters; and large public investments in hillside irrigation for horticulture. The government also subsidizes access to seed and fertilizer, as well as running an export focused packing house, which has received professional management via IFC's advisory services.

The horticulture subsector nevertheless faces several specific challenges to its continued expansion:

- **Input supply.** Noted inconsistencies in supply that can be traced to extension and input deficiencies, including a lack of soil-appropriate fertilizer, irrigation, and improved seed. Irrigation is on the rise, but more is needed.
- **Market linkages.** Smallholder farmers have inadequate aggregation or weak professional management at the cooperative level.
- **Access to finance.** Access to finance is a constraint, not only at the farmer level but also for larger local investors looking to invest in processing.
- **Distribution and marketing.** Costs and inefficiency in access to labeling, packaging, shipping material and downstream value-chain logistics impact competitiveness. Inadequate sorting, grading, and packing services constrain the exploitation of new export markets for fresh produce. Some firms hire distributors to access regional markets, or are setting up distribution businesses themselves, but many experience difficulties in finding or working with distributors. Certification is challenging given the large number of small farms.
- **Quality.** Quality control appears sound, but

produce is sourced from multiple small farmers, which introduces variability. Sorting, packing, grading, and shipping gaps introduce some risk to quality.

- **Transport.** Despite support from the GoR, transport/trade costs still impact on the subsector's export competitiveness.

ENVISIONED TRANSFORMATION

Costs appear to be internationally competitive for some of Rwanda's horticulture products, which are entering regional and global markets. The domestic market for high-value horticulture crops is small and dominated by hotels and restaurants, which helps to explain why little value-added is achieved from processing in Rwanda currently.²⁶ For processed goods, import substitution could be the first market to address. In addition to this, two pathways exist for continued growth in the horticulture sector in the short to medium term through export markets.

First, scaling up exports to the EU where Rwanda can compete based on availability. Rwanda's competitiveness in the EU appears to rely mainly on counter-seasonal supply, where Africa's off-sync growing season can complement global supply gaps. Moreover, Rwanda offers high-value products that are not easily grown in other regional markets that Rwanda competes with, such as button mushrooms or French green beans.

Second, scaling up exports to regional markets where Rwanda can compete based on quality and demand. The Democratic Republic of Congo holds the greatest potential here, as it represents a very large market for Rwandan horticulture, although some product is also going to Kenya's market.

Moving up the agribusiness value chain should focus on more consistent supply, global certification, and improved packaging and transport. Although real opportunities for growth exist, the subsector is underdeveloped. The top business constraint to be addressed is access to sufficient and consistent product supply, with small farmers are not yet providing fully reliable supply for exporters in global and regional markets. More consistent supply would help to further open global markets and improve quality competitiveness. GlobalG.A.P.

and other certifications, which are rare in Rwanda, would also help to support market access to global markets. Packaging and transport are core issues for exporters and cost competitiveness. Private investments in cold chain, sorting, packing, and grading could improve market opportunities for farmers. While fresh produce fetches higher prices, processing could increase shelf life and mitigate losses in transport and storage.

ACTIONS NEEDED

PRIVATE SECTOR FINANCING

- *Small-scale irrigation* opportunities linked to horticulture's growing market opportunities (short-term). Continued investment in irrigation will allow increased productivity, which is linked to markets and incomes. There is evidence that farmers shifting to irrigated horticulture production in Rwanda have doubled their incomes.
- Explore investment in *packing, sorting, grading, and transport* business opportunities (long term). To date, investment has lagged due to the small market, small volumes, and inconsistent supply of goods. As such, the internal rate of return may not cover the cost of investment.
- Introduce *technology-led solutions* to address traceability and farmers' need for capital, insurance, information, and payment (long term). Kenya is one country doing well in agri-tech innovations.

UPSTREAM REFORMS

- Consider *tax relief on labeling and packaging material* (currently paying 5 percent withholding and 18 percent value added tax [VAT]).
- Assess the potential of small-scale irrigation incentives alongside large irrigation scheme priorities.
- Rwanda should support *increased access to GlobalG.A.P. certification* to help open market access. This certification would be easier to obtain if farm production is export-oriented, wherein off-takers or exporters usually have a relationship with the farm and support certification. But the many small

farms make certification costlier for off-takers or exporters; the costs of certification for a small farm is the same for a large farm.

PUBLIC AND CONCESSIONAL FINANCING

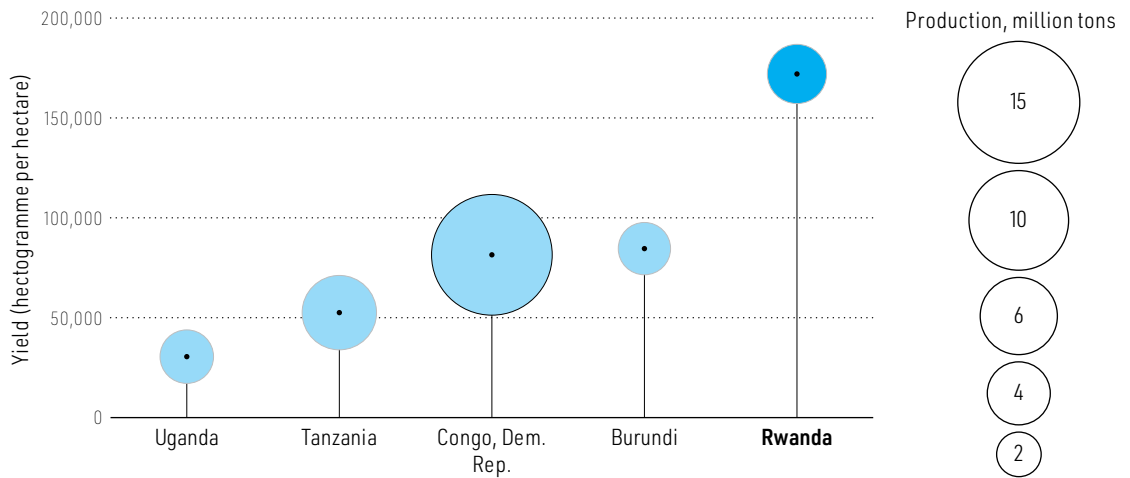
- Facilitate diagnosis and *professional management of cooperatives*. Smallholders lack professionalism, and better business relationships with off-takers would help to drive professionalism. Improved farm-management skills are also needed. Proper business investment will likely allow for profitable access to markets.
- Continue support for (or invest in) *irrigation*, which will improve the consistency of supply.
- Refine and continue *product-driven investment promotion* initiatives targeted to priority export crops in high-potential markets.

CASSAVA

WHERE RWANDA IS NOW

Cassava production, processing into flour, and consumption impact almost all Rwandans. Rwanda has suitable soil and weather for growing cassava, which is one of the most important staple foods for the country, with about 340,000 hectares cultivated. Domestic supply is usually robust, and yields are higher in Rwanda than in neighboring countries (figure 6.3). In 2016, 2.9 metric tons were produced and only about 4 percent of Rwanda's total cassava needs were imported. However, imports increased in 2017 after an outbreak of Cassava Brown Streak disease significantly reduced the yield. It is reported that yields have since rebounded.

Small-scale and informal processing is prevalent across the country. About 30 percent of cassava production is processed into flour to support production of *ugali*, a primary staple, but it is also processed into chips. Processing occurs mainly by small businesses or household units that are informal and use traditional, low-tech, low-cost flour-processing techniques. There is only one high-tech processor, namely Kinazi, which is supporting sales of more sophisticated flour production at higher cost. Because the conversion of cassava into flour occurs all over the country, there is little domestic formal distribution and marketing.

FIGURE 6.3 CASSAVA PRODUCTION AND YIELD, RWANDA AND SELECT EAST AFRICAN COUNTRIES, 2016

Source: Based on data from FAOSTAT.

Markets for Rwanda's cassava are mostly informal and domestic, but there are two or three companies that appear to be profitably exporting. Although most cassava flour is consumed in Rwanda, Kinazi exports cassava flour to the United States and the EU, and a couple of SMEs also export small quantities, totaling less than \$200,000 per year. Kinazi also sells to domestic supermarkets and is looking to expand into more profitable starch production. Investments to modernize the subsector would thus support incomes, food security, and potential export earnings.

The government is providing support in terms of research, planting, pesticides, and market linkages, including financing the R&D of new varieties of cassava. The GoR also owns the majority stake in Kinazi, the largest high-tech cassava processor.

The cassava subsector faces several specific challenges:

- **Planting material.** Vulnerability to diseases, such as Cassava Brown Streak, contributes to production variability. There is only limited availability of disease-tolerant varieties.
- **Production.** Low-tech production inhibits the development of more formal export opportunities.
- **Market linkages and branding.** Little branding exists, despite a preference in the domestic market for Rwandan cassava. Export

market discovery and investment promotion activities are also underdeveloped.

- **Postproduction losses.** Transport and storage facilities are inadequate, leading to postproduction losses.

ENVISIONED TRANSFORMATION

The crop enjoys a comparative cost advantage in production relative to its neighbors. Rwanda's cassava flour can enter global markets at less than world cassava flour prices: \$3.22 per kilogram versus \$3.5 per kilogram. Strong yields and the high quality of the flour also suggest competitiveness for export, notwithstanding the recent disease outbreak. Regional markets need more exploration, but there may be potential given Rwanda's competitive yields. The main market nevertheless remains domestic and this market will benefit from increasing urbanization. According to interviews, cassava flour from Rwanda is often preferred over that produced in West Africa.

Moving up the cassava value chain and modernizing the subsector will need to focus on disease resilience and formalizing the value chain. Domestic processing is low-cost, low-tech, and low-scale, and quality of the product is second class compared with higher-tech, higher-cost processing. Improving the sophistication of processing is one opportunity for the private sector to transform the subsector. Although overall yields are

the highest in the region, there is also scope to improve yields further, which is often compromised by pests and disease in the traditional varieties. Future investment opportunities that focus on exporting to regional and global markets would also benefit from more access to disease-tolerant varieties, currently a public agricultural priority. Transportation is also in need of investment and improvement, given that cassava is a perishable product and significant postproduction losses are reported that impact competitiveness. More broadly, there is a need to develop export markets by exploring market-entry opportunities and promoting the product. Moving into more profitable cassava starch (as opposed to cassava flour) also shows potential for creating markets, although more information is needed to better understand these opportunities.

ACTIONS NEEDED

PRIVATE SECTOR FINANCING

- Consider investing in higher-value and more-efficient processing to lower the cost of cassava flour in Rwanda and to increase export competitiveness (long term). To date, investment has lagged due to the small market size, small volumes, and the inconsistent supply of goods. As such, the internal rate of return may not cover the cost of investment.

UPSTREAM REFORMS

- Invest resources in R&D of disease-tolerant cassava varieties and in further promoting them for uptake in the longer term.

PUBLIC AND CONCESSIONAL FINANCING

- Develop Rwanda branding for the global market.

SUGAR²⁷

WHERE RWANDA IS NOW

Rwanda produces less sugar than neighboring countries, such as Uganda and Tanzania. All sugar produced in Rwanda is used domestically. The domestic consumption of sugar is high, at 100,000 tons in 2017. There is heavy reliance on

imports to meet this demand, as annual sugar imports amount to nearly \$53 million and meet 87 percent of Rwanda's needs. It is projected that maybe 30 percent of Rwanda's needs could be met locally.

Sugar is a low-impact sector. Relatively few people are employed in the sugar subsector and there is no near-term export market potential. Sugar is mainly sourced from 2,000 farms along the Nyabarongo River. Kabuye Sugar Works Limited, the only sugar processing plant in Rwanda, processes about 15,000 tons of sugar annually. Processed products include raw sugar, molasses, and bagasse, which is a by-product used as fuel in boilers. Rwanda is able to meet 13 percent of its consumption needs, while the remainder (worth about \$53 million) is imported, mainly from Zambia, but also from China and South America. In 2017, the East African Community (EAC) waived external tariffs on sugar for Rwanda to address shortages. Imports outside the EAC or the Common Market for Eastern and Southern Africa face 25 percent tariffs (and have been as high as 100 percent on sugar), but this is likely temporary and does not allow the imported sugar to be exported to EAC countries.

There is limited government engagement. The government has divested its stake in the Kabuye Sugar Works through the sale of shares to the Madhvani Group. The government is encouraging investment in upgrading production and processing.

The sugar subsector faces several specific challenges:

- **Land.** Smallholder farmers and fragmented plots lower production efficiencies. The small sugar farming area and limited access to additional appropriate land inhibit sector growth and increased production. The main sugar growing area is prone to flooding, and consistency of supply is at risk.
- **Irrigation.** Investment in land irrigation is necessary to improve production.

ENVISIONED TRANSFORMATION

There is a small cost advantage to local production over imports, which is supported by uncompetitive behavior. Sugar is mainly imported to satisfy



unmet domestic demand at low cost. Markets are entirely domestic, with 100 percent of sugar produced in Rwanda being consumed in-country. The import of sugar is an attractive business with an average margin of 20 percent. It is reported that sugar importers exhibit cartel-like behavior, whereby there is an understanding among the five sugar importers that the 20 percent margin should be maintained. Reduction of the 20 percent margin would bring prices down to about break even, which is lower than profit margins on other higher-value export crops. Enhanced competition in the sugar import subsector, for example through the oversight of the competition authority, should be promoted and would support improvements in consumer welfare through access to cheaper sugar.

There is no export-market potential for sugar, but growth in the subsector would have a direct impact on net exports by being import-substituting. The domestic sugar processor, Kabuye, is making a profit, despite competing with sugar imports. However, perceived quality of domestically produced sugar is lower than imported sugar, and

outdated production facilities contribute to higher production costs compared with world production costs. The marshlands near the sugar plantations experience flooding, thus there is seasonal inconsistency in domestic supply. Nevertheless, reducing dependency on sugar imports would improve the trade balance and generate more earnings domestically (not considering opportunity costs). However, it is unclear to what degree new sugarcane investments will be able to meet domestic needs.

The scarcity of irrigated land may also pose large opportunity costs for other crops with high export potential. Any future investment opportunity would also require the government facilitating access to land for sugar production, since land is so scarce. There was an attempt to find land for an overseas investor in sugarcane in the Eastern province, which failed due to the scarcity of land. In another example, the Bramin company was only able to obtain 300 hectares for its investment, which was in a national park, illustrating again how it may be difficult to facilitate land for sugarcane expansion.²⁸

Affordable Housing

Rising demand for housing in Rwanda is being driven by urbanization and changing demographics. Housing has the potential to become a leading sector of Rwanda's economy, but cannot drive economic growth and job creation if supply remains focused on the top few percent of households. It is projected that almost 345,000 new housing units will need to be constructed in Kigali by 2022, more than half in the affordable housing segment, or for households earning less than \$232 a month. Yet many challenges confront the supply of affordable housing. Capitalizing on the opportunities in the sector will require addressing bottlenecks across the housing value chain that constrain market development. The most important areas to seek cost relief in Rwanda's construction economy are building costs, particularly manufactured goods, and infrastructure costs.

INTRODUCTION AND SECTOR CONTEXT

Rwanda is an urbanizing country. The rate of urban population growth—at an estimated 5.75 percent per annum—is more than twice the rate of Rwanda's overall population growth. This equates to 36,600 new urban households each year.

The government has pursued urbanization of the country as an explicit development strategy. While it has successfully increased the urban share of population to nearly 18 percent (EICV5), this is still below the Sub-Saharan Africa average of 39 percent in 2017 (World Bank 2017).

Demographic trends will continue to drive urbanization, and the resulting demand for high quality, accessible urban services including housing. Rwanda's young and growing population, high land density, and large share of population employed in low-productivity subsistence agriculture will provide impetus to a continued move toward urban areas along Rwanda's path of structural transformation. This adds to the challenge of managing urbanization and adequately providing for the new arrivals and existing residents. Already, urbanization has had commensurate impact on the demand for urban infrastructure and facilities. In Rwanda, only 29 percent of the population has access to electricity compared to nearly 43 percent in Sub-Saharan Africa (World Bank 2016).

Rwanda's urbanization challenges are reflected in its housing challenges. Housing supply extends beyond just the habitable structures; it embodies an entire value chain including provision of serviced land, access to financial products, robust trans-

portation links, among others. When addressing Rwanda's housing challenges, the country is also addressing many of its urbanization and infrastructure challenges and is ensuring that actions to address housing are sustainable within the broader urbanization agenda.

Both public and private sector can play a supporting role in Rwanda's urbanization challenge. For example, private sector can support provision of key infrastructure as well as address housing shortages. Market creation would also create jobs and support incomes through construction activities and infrastructure provision across the housing value chain. Public sector can ensure the right incentives and enabling environment are in place for market creation.

Today, Rwanda's urban housing landscape is dominated by unplanned urban housing. The demand for housing is a significant indicator of the success of the urbanization agenda of the government. Without the availability of formal housing at scale, urban residents are forced into unsafe, sub-standard unplanned housing, which can lead to myriad socio-economic challenges. 38.3 percent of the population in Rwanda is living in informal settlements or inadequate housing, 61.3 percent of the urban population and 32.8 percent of the rural population (EICV5).²⁹ Rwanda is not alone in facing this challenge: globally, up to \$16 trillion will be needed to replace substandard housing and build new housing (McKinsey Global Institute 2014).

Significant shortages exist in urban housing, particularly in the affordable housing segment. The National Housing Policy indicates that the major

constraint to housing provision is low affordability: based on the average wage countrywide of FRW 37,664 and an average wage of FRW 223,527 in the City of Kigali, the average monthly household affordability is between less than RWF 25,000 and RWF 150,000, with the majority toward the lower end. A housing demand study for Kigali outlines different segments of Rwanda’s housing market: Social housing—households with monthly income of less than FRW 33,500 (\$39); affordable housing—households with monthly income of between FRW 33,500 and FRW 200,000 (\$39 to \$232); mid-range housing—middle-class households with monthly income of between FRW 200,000 and FRW 900,000 (\$232 and \$1,045); premium housing—higher-income households with monthly income above FRW 900,000 (\$1,045) (Kigali Demand Market Study 2012).

It is projected that almost 345,000 new housing units will need to be constructed in Kigali by 2022 (Planet Consortium 2012). More than half of these new units will need to cater to the affordable housing segment of the market, compared with 12 percent for social housing, 32 percent for mid-range

housing, and 0.5 percent for premium housing (figure 6.4). Currently, however, only 1,000 formal units are being added annually in Kigali (Planet Consortium 2012) and 5,000 units for the whole country; meanwhile, informal, unplanned housing delivers about 20,000 units every year (CAHF 2018).

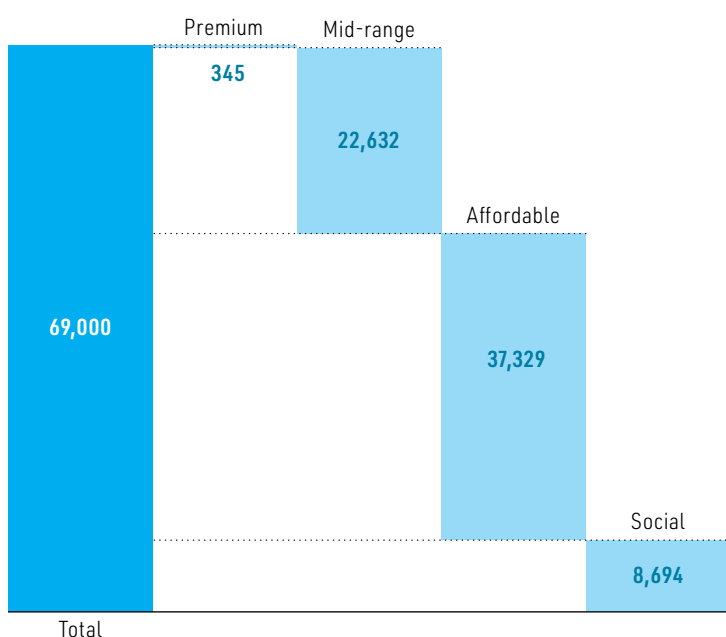
Affordable housing is a national challenge that extends beyond Kigali. With the planned growth of six secondary cities as economic hubs in the country, according to the Second Economic Development and Poverty Reduction Strategy, a similar number of additional housing units would need to be constructed in secondary towns (MINECOFIN 2013). The six secondary cities—Rubavu, Musanze, Rusizi, Huye, Muhanga, and Nyagatare—are home to 26.7 percent of Rwanda’s urban population. (Census 2012).

Secondary cities face similar urbanization challenges. Currently, conceptual masterplans of the secondary cities are under revision to better guide development going forward, with an acute acknowledgement that only a small part of the cities had detailed physical plans under the initial masterplans and capacities to implement the masterplans has been largely inadequate (World Bank 2017e).

Recognizing these challenges, the government has undertaken a series of reforms and initiatives in recent years to stimulate the supply of affordable housing. The current incentive structure under the Prime Minister’s Instructions and the Investment Law will benefit from being examined for its effectiveness so as to be improved to address the lack of developers currently in Rwanda that can undertake large-scale housing projects, including opportunities to bring in international developers from countries where the affordable housing industry is more developed.

The current supply of formal housing nevertheless remains unaffordable for most of Rwanda’s population. The price of formal housing currently available in the market, at more than FRW 20 million, is out of reach for more than 99 percent of Rwandan households (table 6.3). A range of new housing developments is anticipated, but those being approved in Kigali are largely unaffordable to the majority of households, even with government-subsidized land and services. For example,

FIGURE 6.4 PROJECTED NUMBER OF NEW RESIDENTIAL UNITS ANNUALLY BY MARKET SEGMENT



Source: CAHF 2018.
Note: Based on Kigali needs assessment.

TABLE 6.3 AFFORDABILITY OF HOUSING UNITS AT CURRENT PRICE LEVELS

Unit price		Monthly repayment		Affordable to households
US\$	FRW millions	US\$	FRW	(%)
50,000	43.5	780	710,000	0.1
25,000	21.8	390	336,000	0.7
15,000	13.1	234	201,000	2.0
10,000	8.6	156	134,000	4.0
5,000	4.3	78	67,000	11.7

Source: CAHF (2018).

Note: These figures are calculated using the CAHF's Housing Affordability Calculator, based on an estimated prevailing interest rate of 17.3 percent over 15 years, with the borrower paying a 20 percent deposit. Lending data provided by the Development Bank of Rwanda, 2016. It is noted that currently diaspora mortgages are available from some institutions at 15 and 16 percent, but often only for shorter terms (five to 10 years).

in 2017 the Rwanda Housing Authority initiated an affordable housing project with one-bedroom houses priced at FRW 6 million and three-bedroom houses at FRW 18 million (allafrica.com). However, even a house priced at FRW 4 million is accessible to fewer than 12 percent of households.

These shortages create significant opportunities for private sector-led provision of affordable housing. Larger markets will only be reached by moving down the “housing pyramid.” Nevertheless, market failures exist for affordable housing supply. Foremost is access to mortgage finance.

The demand-side of the affordable housing market faces particular challenges in Rwanda and is the focus of ongoing efforts. Housing finance (and offtake) is cited as a crucial inhibitor of the entry of developers into the affordable housing sector in Rwanda. Savings continue to provide the

major share of financing for housing and fewer than 5 percent of Rwandans use bank credit. Current mortgage offerings are also targeted at the salaried segment, that is, the formally employed, which excludes a sizeable proportion of the population and particularly those most in need of affordable housing options. This is being addressed by the government with the World Bank's support through a Rwanda Housing Finance Project. However, supplying formal housing units that cater to the affordable housing segment will also depend on overcoming a number of constraints on both the supply side of the market.

The objective of this deep dive is to identify constraints along the housing value chain that contribute to its high-cost-low-affordability dynamic, as well as market opportunities to address those constraints. It does so through two analytical pieces: a housing economic value chain analysis, and a regional benchmarking of the cost composition of housing supply.

The analysis offers broad insight into key areas where bottlenecks arise. The regional benchmarking exercise, in particular, is meant to identify segments of the housing value chain where costs are higher than other countries, as a first step to diagnosing the constraints that challenge affordable housing supply. Based on these findings, it offers recommendations for public and private sector engagement to stimulate the affordable housing market as a means to deepening Rwanda's econ-

BOX 6.7 NEW DEVELOPMENTS IN AFFORDABLE HOUSING

The Rwanda Development Board recently signed a memorandum of understanding with Mitrelli Group—a multinational investor that specializes in large-scale, long-term projects—to develop up to 10,000 housing units, the majority of which will be affordable housing.

Source: Rwanda Development Board 2018.

omy. It therefore takes a high-level perspective on potential actions that can be undertaken by government, World Bank Group advisory, policy, and investment teams, and other players.

RWANDA'S HOUSING ECONOMIC VALUE CHAIN

Housing is a complex value chain that touches many sectors of the economy. Producing residential housing involves much more than construction value-adding activities, such as digging and laying foundations, bricklaying, plastering carpentry, plumbing, electrical, tiling, and roofing. It also includes developers, contractors, and households adding value to the economy during the process of improving houses through the addition of their intellectual property and skills (labor), overheads and plans (gross operating surplus), as well as through receipts of subsidies and payments of levies and taxes. To engage in these value-adding activities, contractors need to purchase materials and service inputs from other sectors of the economy. The housing economic value chain sets out what raw materials, manufactured goods, and services (intermediate inputs) are required to feed housing construction, and where these are sourced in the economy.

Market creation in the housing sector would have a strong and direct impact on Rwanda's economy. The estimated direct contributions of housing construction and housing rental activity accounted for nearly 10 percent of Rwanda's GDP in 2017 (CAHF 2018).³⁰ This is much larger than other African countries, where direct contributions only comprised 2.1 percent of South Africa's GDP in 2016, and 6.3 percent of Uganda's GDP in 2016/17.

The sector's economic contribution reflects strong links with different sectors of the economy. Intermediate input purchases represent 60 percent of the sector's output. Slightly more than half of the intermediate inputs (52 percent) are sourced from tertiary sectors, 46 percent from secondary sectors, and the remaining 2 percent from primary sectors. With the exception of the primary sector, little inputs are of domestic production for the formal housing market. The other 40 percent is value-added from the construction and rental process.

Housing also has a significant impact on jobs and incomes. The sector supported around 157,000 jobs, and paid labor remuneration totaled FRW 111 billion in 2017—half of the value-added generated from the construction and rental process. This is even higher if considering the indirect and inducted impacts.

The economic value chain analysis corroborates the identification of housing as a potential lead economic sector for Rwanda. This stems not just from the sector's overall impact on GDP, but also due to its high potential for local value-added in intermediate inputs.

However, Rwanda's housing sector cannot drive economic growth if it is only focused on the top few percent of households, which represents a small market. Given the limited formal housing delivery in Rwanda, it can be assumed that much of this economic value-added is generated in the informal, unplanned housing sector. By necessity, it must drive a down-market focus that offers greater affordability, and more chance of annual expansion and growth of the housing market.

COST BREAKDOWN OF HOUSING IN RWANDA

The market for lower-cost housing products will need to be stimulated for these job and income opportunities to emerge. A cost composition is key to understanding the challenges for affordable housing in Rwanda (see appendix E for the methodology). The comparison offers broad insight into the relative cost difference of various components in the housing value chain, as a first step to identifying constraints to scaling up lower-cost housing on the supply side. Identifying possible interventions that could assist in unlocking further economic value from housing construction and rental in the economy.

The methodology specifies, details, and costs a "standard house" on a uniform basis across cities in African countries.³¹ First, the standard house is defined as a 55 meter-squared house with two bedrooms, one bath and a veranda on a 225 meter-squared plot. Second, it breaks this standard house into its cost components across the value chain, including land, infrastructure, construction, and development. Third, it costs these components

using different quantity surveying and costing conventions. This ensures that costing is consistent and comparable across countries. South Africa and Kenya were used as regional comparators due to data availability.

Benchmarking housing costs shows costs are 30 percent higher in Rwanda than South Africa. The total costs of a 55 meter-squared house on a 225 meter-squared plot in Rwanda (Kigali) is \$50,000, compared with \$39,000 in South Africa (Johannesburg). Housing costs are even higher in Kenya (Nairobi), nearly 20 percent higher than Kigali, or \$61,000. There is also relatively little change in the total cost of housing when reducing size, where a 35 meter-squared house in Kigali (a 36 percent decline) falls only to \$41,000 (a 25 percent decline).

This has significant implications for the overall affordability of housing in Rwanda. Considering unsubsidized house construction costs, it is estimated that fewer than 1 percent of households are able to afford a \$40,000 house if mortgaged.

Construction costs are by far the largest cost category in Rwanda (figure 6.5). They represent 55 percent of the total cost in Kigali. This is followed by infrastructure (17 percent) and taxes (13 percent). Land and registration costs, compliance and approvals, and other development costs represent about 5 percent each.³² Because half of total house cost in Kigali comprises nonconstruction elements, seeking more affordable accommodation needs to look to cost efficiencies across the housing delivery value chain.

What drives the higher costs in Rwanda? The analysis looks at the difference in prices between Kigali and Johannesburg for insights (figure 6.6).

Land costs are roughly equal between Kigali and Johannesburg. The similarity (and relatively low cost compared with other African countries) of land registration costs is, in part, a result of these two countries being the only two African countries with digitized deeds registries and both of these systems being very efficient by international standards. However, this does not imply that land costs are not high in Rwanda relative to other African countries, since Johannesburg has one of the highest priced land markets in Africa. Land titling and registration cost more than double the

estimated raw land cost in Kigali. Access to land, rather than the absolute cost of land, is likely to be a greater impediment to affordable housing development.

The absolute cost of compliance and approvals are 203 percent higher in Kigali than in Johannesburg. However, they represent less than 5 percent of the total cost. They are also higher in Kigali than Nairobi. This is more a factor of South Africa's low costs than Rwanda having high costs. The costs of compliance and approval are relatively low by international standards in Rwanda, making these two countries among the most efficient in respect to registration costs in Africa. For example, according to the World Bank Doing Business index for 2018, Rwanda ranks 112th out of 190 countries for dealing with construction permits, with an average of 15 procedures taking 113 days, well above the Sub-Saharan Africa average of 148 days.

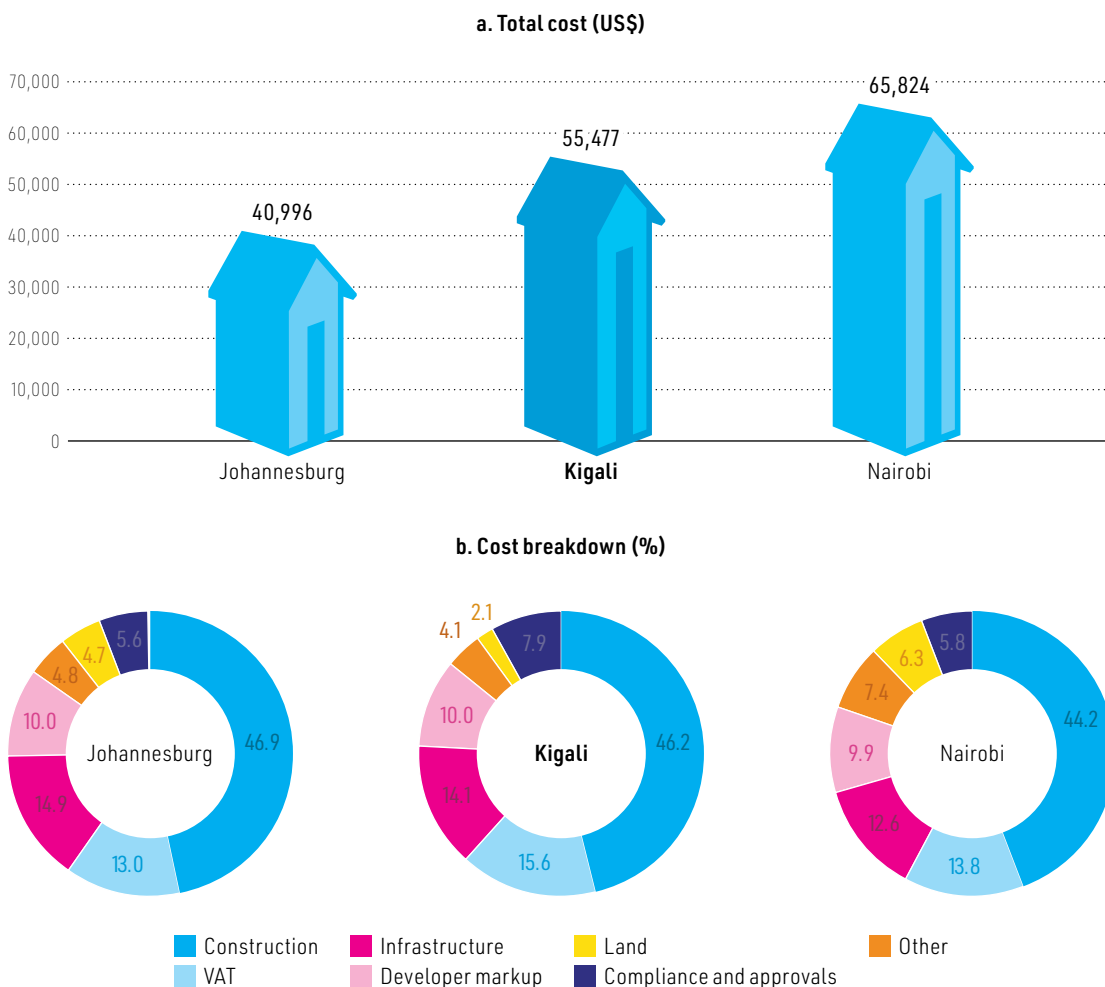
Differences in infrastructure costs (17 percent) is attributed primarily to higher input materials costs. Given the lack of widespread bulk infrastructure networks and facilities across Kigali, servicing a particular land parcel often requires significant capital works to link to existing or newly constructed city grids.

Infrastructure and land subsidies are available to developers. The GoR provides free or cheap land to private developers for "affordable" and "social housing" developments and installs or pays for infrastructure. According to the CAHF 2018 study, this contribution amounts to between \$7,000 to \$10,000 per unit.

VAT is 52 percent higher in Rwanda than South Africa. Rwanda has 18 percent VAT compared with 14 percent in South Africa and 16 percent in Kenya. Rwanda's higher VAT rate of 18 percent adds an additional cost in the affordable housing development market.

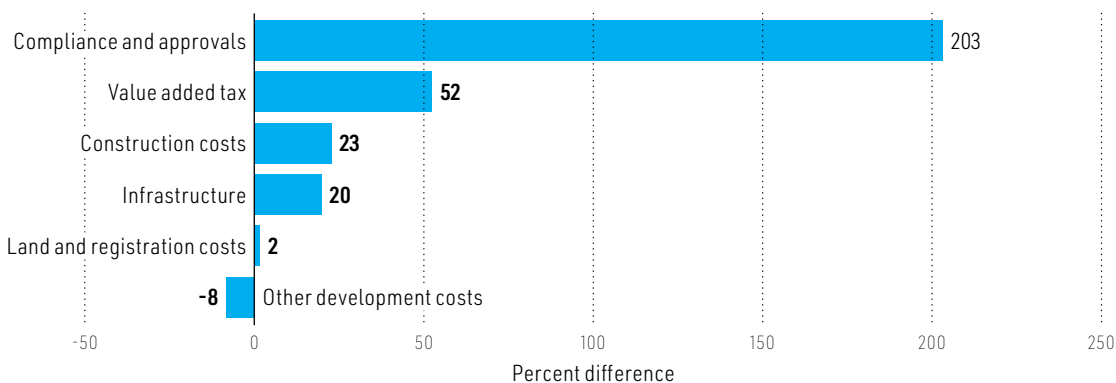
Most importantly, construction costs are 30 percent higher in Kigali than in Johannesburg. Construction costs include labor costs, materials costs, and indirect costs. Labor costs for construction are significantly lower in Kigali (-31 percent). Construction materials costs are significantly higher (45 percent), accounting for half the difference in the

FIGURE 6.5 TOTAL HOUSE COST AND BREAKDOWN, RWANDA AND COMPARATORS, 2018



Source: CAHF 2018.
 Note: Infrastructure includes bulk, link, and connector.

FIGURE 6.6 COST DIFFERENCE BETWEEN RWANDA AND SOUTH AFRICA, PERCENT DIFFERENCE WITH SOUTH AFRICA AS THE BASELINE, 2018



Source: CAHF 2018.
 Note: Infrastructure includes bulk, link, and connector.

construction cost between identical single-family houses in South Africa and Rwanda.

The most important areas to seek cost relief in the Kigali construction economy are building costs and infrastructure costs. This is given by the importance of these different components, coupled with their cost differences.

It is manufacturing goods and not primary materials that add most significantly to the high cost of building materials, and thus construction. Comparing materials sourced from the primary economic sector shows that, without exception, these materials are on average one-third cheaper in Kigali than in Johannesburg. This includes building sand, concrete sand, stone, and washed plaster sand. One reason for the low cost is the informal nature of the extraction activities, which of course have significant environmental implications.

Instead, intermediated inputs that are manufactured goods is on average 68 percent higher in Kigali than Johannesburg. These items are mostly imported into Rwanda (such as plumbing and electrical components) or are locally manufactured

or assembled using imported materials (such as window, door frames and roofing materials).

For example, cement block bricks in the quantity of 510 bricks cost \$393 in Johannesburg compared to \$596 in Kigali. Roof construction materials (timber) are \$150 in Johannesburg compared to \$236 in Kigali. The cost difference for floor tiles and sundries (55 units) is 420 in Johannesburg versus \$1,143 in Kigali. Tables F.1 and F.2 in appendix F present the detailed results across input products.

OVERVIEW OF CONSTRAINTS AND MARKET OPPORTUNITIES

Insight into the housing value chain helps identify some key challenges that may be leading to unmet demand and low supply of affordable housing in Rwanda, such as use and availability of land, local construction materials including those that utilize new technologies, and incentives for developers. This begs the question: what can be done to stimulate greater private sector participation in the provision of affordable housing?

BOX 6.8 DEMAND-SIDE CONSTRAINTS

Housing is mostly unplanned in nature. Land parcels are small, although well-documented, focused on standalone, detached housing. Most homeowners invest their personal savings into construction through “sweat equity” spread out over multiple years.^a Currently, fewer than 5 percent of homeowners cite formal financial credit (from banks or microfinance institutions [MFIs]) as the source of housing finance, with 85 percent relying on personal savings (BNR, World Bank mortgage database).

Housing finance is cited as a crucial inhibitor of the entry of developers into the affordable housing sector in Rwanda, with potential entrants concerned about the take-up of units. If the target segment for affordable housing is unable to access mortgage financing, it is unlikely they would

be able to buy units even if they were available in the market.

Even as the demand for housing finance rises, financial institutions report an inability to meet demand due to the limited availability of long-term finance. The biggest issue to the expansion of housing finance is lack of long-term finance in the market. Banks in Rwanda depend primarily on short-term deposits, which constrains their ability to offer long-term mortgages. In the formal financial sector, existing housing finance is dedicated for the most part to salaried employees in the public and private sectors, even though informal workers may have comparable incomes, which again excludes a large proportion of potential homeowners, particularly those most in need of affordable housing options.

Provisions such as flexible interest rates through which increases in the cost of funds are passed on to consumers and prevalence of short-term loans increases risk for potential homeowners.

De-risking instruments such as credit guarantees would incentivize banks and MFIs to reach out to the down-market segment in Rwanda. This is being addressed by the government of Rwanda with the World Bank’s support through a Rwanda Affordable Housing Finance Project. Improvements in the enabling environment (such as the increase in the maximum loan-to-value ratio from 30 to 70 percent in 2011) have also led to an increase in housing finance; in 2016, housing finance amounted to 15 percent of total bank credit and 30 percent of total microcredit.

a. Sweat equity refers to value-enhancing improvements made by homeowners to their own properties.

CONSTRAINTS

Addressing the demand gap in affordable housing will depend on being able to reduce the cost of formal housing units. This must occur alongside efforts to address the demand-side constraints to housing finance (box 6.8). A number of constraints have been identified on the supply-side that contribute to the high cost of building.

BUILDING MATERIALS AND CONSTRUCTION

Housing and construction providers in Rwanda are characterized by four somewhat distinct categories: (a) homeowners who construct new units or upgrade existing structures in incremental stages, depending on available resources; (b) small-scale, mostly local companies that construct developments on land purchased from government or private sources; (c) larger, locally-based companies with international connections, including access to external equity and capital; and (d) large, international construction companies that build large, civil works and housing developments.

Local materials are primarily used in the unplanned, informal housing sector and are not generally regulated and may not meet the quality required by developers. Construction materials for incremental development are predominantly using locally-sourced and manufactured wall material (clay or cement bricks) with locally-manufactured roof, window and door frames manufactured using imported steel. Anecdotal evidence suggests that local production is, in general, unable to meet the operational demands (for example, timely delivery of materials) for large-scale developments.

Developers use a combination of local (cement and clay brick) and imported materials. The higher-end market makes extensive use of imported materials and professional services. As a result, large developers and construction firms are within the reach of a niche market segment that can afford their services and products. This presents a challenge for generating economies of scale that would presumably bring down overall housing costs in Rwanda.

Import taxes add to the price of building materials. Imported inputs are a significant driver of high construction costs. The top 10 building materials imports accounted for more than 5.7 percent

of total imports in the country with estimated tariff rates of 15.4 percent (CAHF 2018).³³ Cost premiums on certain goods such as cement, steel products, porcelain, and many specialist inputs (plumbing and electrical goods) are extremely high in Rwanda. In many cases, these are more than 50 percent more expensive than the same products in South Africa (see tables F.1 and F.2 in appendix F).

Transport costs are also reported by construction material companies to drive up the cost of locally sourced, as well as imported materials. This finding is borne out by the fact that logistics within Rwanda and regional integration remains a cross-sectoral constraint. Transport costs account for 40 percent of the value of imports compared with 12 percent in Kenya and 36 percent in Uganda (African Development Bank 2013). Improvements in the road network and railways, within Rwanda and across the region, would contribute to reduced costs for imports in the construction sector.

INFRASTRUCTURE AND LAND

Links to formal infrastructure networks are not common (paved roads, electricity, water supply). Connections to public utilities such as water, power, and sewerage are expensive. Rwanda's challenging topography is another factor to consider, with zoning and providing services to difficult terrain both logistically complicated and expensive. Currently, the prime modality to meet the pressure to provide serviced land (including infrastructure, which is very expensive) is for the government to acquire land upfront from private owners (i.e. land banking) to provide it as an incentive to developers and investors (World Bank 2017e). This does, however, have considerable fiscal implications, especially if the subsidies are to expand to serve the down-market segment. Sanitation systems being developed are unsuited to dense urban areas with high water usage (EIU 2018). Organized solid waste collection is only available to 36 percent of urban households (EIU 2018).

Government offers a number of incentives for housing. Rwanda's National Housing Policy states that "...the approval of incentives through implementing programs will support the following principles: (a) Investment into in-country

production facilities of local conventional and new construction material, involving quarries, plants, production and assembly; (b) Investment into green technologies and production aligned to the green growth strategy and requirements established within planning and building regulations. Special focus due to its feasibility shall be on solar hot water heaters, photovoltaic, and rain water harvesting and its use; (c) Preferred use of local materials in construction, both raw and processed, wherever possible; (d) Use or re-use of waste materials including organic waste in construction material production; (e) Use of solar hot water heaters, photovoltaic systems and rain water harvesting.”

While affordable housing is a government priority, the incentives on offer, such as the 30 percent subsidy on infrastructure costs, are not adequate to target expansion in affordable housing (The East African 2017). Developers indicate that construction costs of an affordable unit can be limited to below \$20,000 for buyers but such units can sell for as much as \$30,000 to \$40,000 if they have easy access to roads and other bulk infrastructure. This means that valuable incentives may not be best targeting the development of units that are catering to the affordable segment.

There have been some positive developments in the land sector that support the development of affordable housing in Rwanda. Globally, Rwanda is one of the top performers in land registration. By 2012, Rwanda completed mapping of all land parcels in the country and had prepared 8 million titles; of these, 7 million titles had been collected by mid-2017 (Schreiber and Bayisenge 2017). Land registration requires only three procedures taking seven days to complete, and the system is fully digital.

Nevertheless, access to land remains a challenge for investors. The government negotiates and secures land for investors in the sector. However, government owns very little land in Rwanda, so pooling land at scale is a challenge. The government has been addressing this issue through land banking (buying land today for future investment projects). There are a few issues with land banking. First, land is being purchased in areas where it is cheap and may not reflect optimal location for

investors or households, for example, in areas close to employment opportunities, transport network, or markets. Moreover, there is little community engagement in this process. Second, is scale where landholdings are small. Third, there is concern around fair compensation for expropriated land. In addition, other mechanisms for land pooling have not been tried.

There is no consistent framework for partnerships for land whereby landowners and developers can collaborate to build affordable housing. Currently, the prime modality to meet the pressure to provide serviced land (including infrastructure, which is very expensive) is for the government to acquire land upfront from private owners (that is, land banking) to provide it as an incentive to developers and investors. Providing a legal and financial framework for partnerships between landowners and developers and possibly incentivizing partnerships (through risk-management schemes and instruments) may be useful in this context.

In Kigali, strict zoning may be restricting the development of high-density areas. The city has strict zoning laws that govern land use and planning. These lead to a misalignment between formal codes and actual land use, which then leads to resettlement and redevelopment, incurring financial and human costs as vulnerable populations may be forced out of the economic core (World Bank 2017). Meanwhile, investors may then be likely to redirect resources to areas where zoning laws are more flexible and/or zoning has not been completed.

There is no clear legal basis for zoning decisions; the Land Tenure Regularization has increased individual ownership, but ongoing zoning may change the categories assigned (for example, residential to commercial) which then dictates land usage. This also creates uncertainty for landowners who do not know if and when their land may be zoned for commercial/public use and whether its true value would be realized to the benefit of owners. Going forward, the issue of a mismatch between land use as appears in land titles (2008) and as stated in the National Land Use and Development Master Plan (2011) will need to be resolved to avoid a permanent challenge to synchronizing land registration and land use planning.

BUILDING CODES, STANDARDS, AND TAXES

Property and housing preferences in Rwanda are a major contributor to high housing costs.

Consumers have a strong preference for 55 square meters, single-story, detached housing with open space, and development densities are low by international standards. As a result, housing costs more. High-density housing products will need to be developed. Consumer education campaigns can help to stimulate market demand for dense housing. The topography of Rwanda also limits the habitable area and particularly areas suited to development of medium-and-high density housing.

City planning and zoning policies may also in some cases limit the development of affordable housing. In Kigali, for example, the Kigali City master plan guides all subsequent housing developments and is reported to restrict usage to high-cost construction materials (Institute of Policy Analysis and Research Rwanda 2018). Requirements on plot sizes can also increase costs.

VAT rates are also higher in Rwanda than elsewhere, further increasing the cost of housing.

The lack of clarity on what constitutes affordable housing in Rwanda also creates uncertainty for potential entrants into the market. For example, what price point does housing need to be offered at, and whether this is viable given current market conditions.

SKILLS

Professionals such as architects, engineers, and developers are in short supply. There is also a skills gap in the technicians' and artisans' categories. The last labor force survey of the construction sector was undertaken in 2012. This revealed the following roles: managers (5.6 percent); construction scientists, that is, graduates with construction education (5.7 percent); liberal professionals, that is, graduates without construction education (1.7 percent); technicians with diplomas or certificates in construction-related courses (7.9 percent); and artisans including skilled and unskilled labor (78.9 percent). The 2012 ratio of scientists to technicians to artisans was 1:1.4:12.2, in contrast to international standards of 1:5:30.

These professional services are important for scaling up the housing sector. In particular, there

is a requirement for a professional construction signoff, but limited professional capacity exists within Kigali to do this. As a result, this function is mostly outsourced. The comparatively high costs of professional services, such as engineers and architects, mean this process is often expensive (CAHF 2018). The green building policy, introduced in 2017, also requires certification and professionals able to meet the requirements set out in the policy (The New York Times 2017). In 2012, a law was passed that requires local and foreign builders to register with the Institute of Engineers in order to undertake construction (The East African 2018). Combined with an effective support to equip local builders with relevant technologies and skills, this can be an initiative to develop the industry as a whole.

FINANCE

The gap in long-term finance in Rwanda affects the supply side of the housing market as well as the demand side. The GoR and the World Bank are working to address housing finance on the demand-side, but additional efforts are needed to direct supply to the affordable housing segment.

COMPETITION

Market structure and competition matter for how goods and services are priced. The cost benchmarking exercise points to high costs of intermediate inputs. For example, cost comparisons show that Rwandan-made cement cost on average more than cement produced in Tanzania and Uganda.

Increasing the number of market players may help competitiveness and bring prices down. Higher costs in Rwanda may reflect mark-ups that could be a result of, for example, a few dominant players that do not compete on price within a sector. At the same time, a few dominant players within a sector may simply reflect market outcomes, where demand is not yet sufficient to sustain multiple competing firms. A related challenge is the small market size in Rwanda, which add to the challenge of developing economies of scale that hinder private investment, constrain innovation, and are essential to bringing down costs.

Firms outside of the private sector (including SOEs) are found in the construction and infrastructure sectors as discussed in other parts of

the document. SOEs operate in the sector across different segments such as residential and commercial construction and large infrastructure projects. These firms also participate in the production of construction materials (see appendix G). Global experience shows that in many cases dominant SOEs can inhibit entry of new players.

There is no detailed study on the role of enterprises with minority or majority government shareholding in the construction sector (see appendix G) and its impact on private sector activity. This is suggested for follow-up work, to understand if market structure of competition could be increasing prices of goods and services in the housing economic value chain. Investment incentives or partnerships with enterprises with minority or majority government shareholding that apply to affordable housing must also be applied with competitive neutrality, particularly through competitive procurement in the selection process.

MARKET OPPORTUNITIES

The projected demand for affordable housing speaks to new market opportunities along the housing value chain, which is stimulated by rising urbanization and demographic trends. By leveraging these opportunities, public and private sectors can, individually and in partnership, scale up supply of affordable housing in Rwanda.

The formal construction sector is underdeveloped. Rwanda's formal housing construction sector is small, and often focused at the top of the "housing affordability pyramid." As such, it currently meets a very small proportion of the potential demand that affordable housing and urbanization growth rates should dictate. New housing developments that move down-market therefore offer immense opportunity for construction companies and developers.

Building materials that use local inputs offer high potential for domestic value addition. While there are natural raw materials that are locally available, local production using these materials tends to operate below capacity. Identification of the specific products that can be locally manufactured will require more in-depth analytics and feasibility studies, but some key groups of materials show promise for local manufacturing growth. These

include: cement and cement products; ceramic tiles (glazed and nonglazed); tube pipes, hoses of plastic and vinyl materials; paints and varnishes; and manufactured steel products.

Formalization of the local building materials sector could support better environmental outcomes. Concerns were raised as to the environmental impact of much of the quarrying activities in Kigali, which is often unregulated and is stripping materials from natural areas such as riverbeds and wetlands.

Professional services such as architects and engineers also represent new opportunities for the private sector. These services are currently in short supply (and therefore expensive) in Rwanda due to few qualified professionals.

New technologies can address the high costs of serviced land and infrastructure for new housing locations. Examples include solar panels for electricity or hot water heaters, photovoltaic systems, and rainwater harvesting. The GoR has recently provided \$46 million to formal financial institutions (banks and MFIs) to finance off-grid and renewable energy for about 445,000 households across Rwanda (The East African 2018).

INNOVATIONS IN THE HOUSING SECTOR IN RWANDA

Innovators are working to bring lower-cost options to Rwanda's housing market (box 6.9). Alternative building technologies (ABTs) offer an innovative approach that can complement traditional construction materials and techniques. ABTs in Rwanda's market, or in premarketing development and trial stages, include prefabricated lightweight wall panels, variations on molded stabilized earth, fired clay, and cement brick and block alternatives, earthbags, plant-based oil sealant for earth floors, among others. Cement and concrete-based bricks have also been identified by a multinational company as potential low-cost construction products where local capacity and imported technology can combine to stimulate the affordable housing sector.

However, no truly interrogated building systems were found (CAHF 2018). According to innovators conducting market scoping activities in Rwanda, it takes considerable effort to identify local partners, architects and construction companies that can work with innovative technologies. High import

BOX 6.9 NEW TECHNOLOGIES IN RWANDA'S HOUSING SECTOR

There have been some successful cases of backward linkage formation in construction and agriprocessing in recent years. Strawtec, a German producer of modular construction systems based on straw boards, produces 500,000 square meters of building panels per year, enough to construct 2,000 homes. The company reports to have trained 1,200 farmers, and to have created 5,000 farming jobs in the country.^a

Rwanda's abundant clay deposits are of excellent quality and the massive demand of the country's fast-growing cities are fertile grounds for the construction industry to produce and build with modern brick

a. Aquila Times 2016.

technologies. Skat Consulting Limited is an independent Swiss consulting company and resource center working in the fields of development cooperation and humanitarian aid. For several years, Rwandan small and medium enterprises, with the support of the Ministry of Infrastructure and the Swiss Agency for Development and Cooperation, have started to produce machine-made modern bricks that allow for the construction of smart and cost-effective buildings. These technologies have the potential to significantly reduce the cost of housing and construction and bring tens of thousands of jobs back to Rwanda that were lost to the foreign cement industry.

taxes, low local capacity to source raw materials, and limited local technical expertise also constrain the increase of ABTs in housing supply.

Local producers need support in using and scaling up pilot technologies for new building materials. These products are supplied either by local Rwandan companies, or more commonly in joint ventures with international partners that provide the initial technical and financial input required to bring the products to local market.

ABTs also need to be tested for cost-effectiveness and acceptance in the market. Market uptake of these technologies (for example, lightweight wall panels) is only starting, and anecdotal evidence suggests there exists a perception by developers that local consumers are not particularly attracted to housing built from alternative materials. This points to two issues: one, to educate consumers about new technologies and materials, through for example a communication campaign; and, two, to incentivize development of technologies that are suited to local consumer demand and taste. The question of whether these innovations can be applied at scale with timely delivery in large-scale affordable housing developments also remains.

ACTIONS NEEDED

Harnessing the full potential of Rwanda's affordable housing market as a growth sector will require concerted public and private sector

efforts. Capitalizing on the opportunities in the sector will require addressing bottlenecks across the housing value chain that constrain market development. This deep dive identifies short-term interventions that can yield rapid benefits.

PRIVATE SECTOR**STIMULATE PRIVATE SECTOR DEVELOPER ENGAGEMENT THROUGH TARGETED INCENTIVE FRAMEWORK**

The incentive structure for developers and construction companies is essential in order to stimulate greater private sector investment and diversification in the affordable housing sector. The right incentive framework can also act to address the lack of developers currently in Rwanda that can undertake large-scale housing projects, including opportunities to bring in international developers from countries where the affordable housing industry is more developed.

Some combination of public investments, tax incentives, and subsidies will be needed. Incentives that have been identified as potentially useful to ease entry into the affordable housing segment include import tax rebates, provision of serviced land and innovative financing mechanisms (for example, public-private partnerships [PPPs]).

Potential incentives for developers may include:

- Further incentives for higher density and more

affordable housing—with developers incentivized to build extra housing units on a given parcel of land if a percentage of the units are more affordable.³⁴

- Expedited processing—with zoning, planning, and building permits for projects that include affordable housing to be processed on an expedited basis.
- Tax abatement—with property taxes for housing that includes affordable housing to be reduced. The current residential property tax rate is 0.1 percent and there is a proposal to raise this to 1 percent; affordable housing is exempt (The New York Times 2017).³⁵ The current incentive structure under the Prime Minister's Instructions and the Investment Law will benefit from being examined for its effectiveness so as to be improved to address the lack of developers currently in Rwanda that can undertake large-scale housing projects, including opportunities to bring in international developers from countries where the affordable housing industry is more developed. Article 3 of the Investment Law provides lists the construction of affordable housing as a priority investment sector and incentives to investors, such as: corporate income tax reduced from 30 percent to 15 percent per the Investment Law, covering a few sectors; accelerated depreciation of 50 percent, and corporate gains tax exemption applicable only to a few selected sectors.

It is important to define a strategy for each income segment, to create a functioning housing market at the start. Creating a vibrant housing market will require to start from where the market economics meet demand and supply, then expand progressively to the lower income segments.³⁶

INCENTIVIZE PRIVATE SECTOR FOR LOCAL PRODUCTION OF BUILDING MATERIALS

New entrants into the building materials sector can benefit from incentives to test viability in the local market. This is especially true for those exploring opportunities for low-cost, technology-driven production of local building materials. In addition to the existing 'Made in Rwanda' campaign

incentives that include reduced corporate tax and import duties on building material machinery and equipment, there is also a further role for consortium facilitation, or facilitating partnerships between technology companies, construction companies, architects and designers and other stakeholders, who can jointly deliver on large-scale developments. The private sector will also need support in bringing in machinery and equipment, and foreign talent to help jumpstart technology transfer and local production.

SUPPORT INNOVATION IN CONSTRUCTION

In addition to investing in the development of local building materials, there is an opportunity for Rwanda to lead the way in innovations in construction. For example, increasing the use of precast technology and repeatable design elements can bring down the cost of on-site construction (McKinsey Global Institute 2017). Use of advanced technologies like automated tools and equipment on-site, big data for design and planning, cloud-based business solutions and “prefabricated prefinished volumetric construction” offers viable opportunities for bringing down cost. For single-family homes, an approach that leverages standard factory-built components assembled on-site can deliver solutions on scale. It is recommended that a review of the current incentive structure be conducted for analyzing effectiveness in terms of clarity, predictability, and transparency for attracting new investments as well as use of public resources.

STIMULATE LAND DEVELOPMENT AND PROVISION

Land release will need to increase in pace if a sustained housing delivery program is to be encouraged. While public and private land parcels are still available, the government should consider implementing land assembly instruments (in addition to land banking) to ensure land availability over the medium term. One option is land readjustment, where landowners pool their land to allow space for infrastructure and services and make a settlement/neighborhood accessible to developers to redevelop. Given the predominance of unplanned settlements especially in Kigali,

land readjustment can also be an opportunity to plan these settlements, while keeping residents in their communities and making land available for upgrading, thereby brining the existing housing stock to the formal market.

Policy certainty towards land use and zoning is necessary for attracting investors and developers. Nontransparent zoning processes can also make it challenging for landowners to plan developments when rezoning can completely change the land use regulations. The reduction in tax on affordable housing is one such initiative that has already been implemented.

Locations of planned affordable housing sites need to be made publicly available and mapped in city plans. Chosen locations also need to be paired with the broader spatial and urban planning process, including transport and connectivity to markets as well as local employment opportunities. Citizen input and views for affordable housing locations and connectivity should also be included. Moreover, once these are decided, it is still important to introduce flexibility into the master plan.

INVEST IN MEDIUM-TO-HIGH-DENSITY HOUSING

More attention should be given to medium-density (versus freestanding) typology housing in Rwanda, to optimize the use of serviced land. Land assembly and partnership development is key to obtaining land suitable for higher density construction.³⁷ Adopting adapted planning and development standards including construction is needed. For example, small plots with local construction materials and renewable energy would not satisfy today's urban planning and building standards.

In Kigali, small or individual owners of land parcels zoned for higher density housing in the master plan are often unable to obtain the technical and financial resources required to build high-rises. As a result, the land lies fallow and undeveloped. One possible solution could be to assist these small land owners to enter into joint venture arrangements with larger construction companies where the land is used as equity, but with the landowner sharing in the downstream value-added, rather than merely sacrificing the asset at ground floor price.

Additional analysis is needed to identify whether land hoarding is a challenge and what can be done to address it. In China, for example, an idle-land tax is imposed on owners of once-public land who fail to initiate site development (Laven 2014). The World Bank's analysis of the new property tax law is that the land tax makes it possible to tax plots more highly, to deter land-holding, and to allow a doubling of taxes on vacant land. The understanding is that the introduction of a higher tax rate for plots above a 'standard' size could be leading to subdivision of parcels. This in turn could have implications for some of the recommendations on land readjustment, which will require a review of the current land tax.

UPSTREAM POLICY ACTIONS

INSTITUTIONAL COORDINATION

There is a need to bring together stakeholders. Currently, many ministries, government departments at different levels, and specialist institutions operate in the housing sector. Clear roles and responsibilities, and transparent policies, strategies and financing instrument will be important. Industry bodies such as the Institution of Engineers, the Institute of Architects and the Real Estate Association of Rwanda do operate within their respective ambits but rarely coordinate on sector-wide challenges.

There is a need to undertake assessments of the local capacity—financial, city management, administrative and technical—needed to implement the city master plans under development. This should be a bottom-up approach that integrates with the district development plans and ensures coordination between the various regulatory stakeholders.

SUPPORT SKILLED PROFESSIONALS

Increasing the supply of skilled professionals needed in the housing market is a priority. This includes vocational training and certifications in the short to medium term and expanding tertiary education programs in these disciplines in the long term. In addition, programs to bring in regional and international talent to meet local demand may also be an option to explore. (Recommendations to address skills constraints broadly are presented

as cross-cutting constraints.) In addition, there is the need for on-the-job training and engaging local actors in the sector. It is important to understand noncompetitive hiring and seek data on graduate trajectories. It is critical that graduates and TVET trained individuals are facilitated into the development sector in order to gain this practical experience and expand the depth and breadth of professional and technical capabilities.

Treatment of foreigners can also support availability of skills professionals (World Bank 2015). Recommendations include: removing mandatory requirements of mutual recognition and reciprocity arrangements to register foreign legal, engineering and architecture professionals (by adopting an approach similar to public accountants); and facilitating work permits for professionals in areas identified by government (such as engineering) by removing market tests.

UNDERTAKE NATIONAL CONSUMER EDUCATION

There is a need to providing national consumer education about homeownership, and the range of available housing options. An informed consumer segment can start to invest in medium- to high-density housing.

PUBLIC-PRIVATE SOLUTIONS

DEVELOP INFRASTRUCTURE INCLUDING THROUGH PPPs

The provision of new serviced land—water and sewerage, electricity, transportation infrastructure—is an important cost component. Because of this, it is key to affordable housing development, and delivering low cost housing on small scale. If developers need to undertake the delivery of all services themselves to new sites, construction will no longer be affordable. How urban infrastructure gets financed going forward is therefore essential to affordable housing supply. Rwanda should also invest in upgrading services delivery in existing informal, unplanned housing areas.

The PMI on government support for formal housing and informal settlement attempts to address support to PPPs for infrastructure. It is understood that the PMI relies on developers submitting proposals to government, rather than government identifying the priority areas that could

benefit from servicing. The ‘affordable’ threshold to qualify for the servicing is FRW 30 million, with not all housing having to fall within that bracket. Key considerations for the existing framework to help bring down the costs are: allow much smaller plot / housing sizes; allow incremental development and focus on providing basic grids and sanitation components in place (that is, similar to sits and services); and working out the financials of the current incentive of providing serviced land and finding a way to structure it in PPP deals.

There is a strong government role in the provision of infrastructure overall.³⁸ This is a major undertaking with fiscal and environmental implications, requiring extensive feasibility studies. As infrastructure development proceeds apace in Rwanda, there may be opportunities to offer consolidated packages and priority position to housing developments in order to speed up supply of serviced land.

Infrastructure is a constraint that extends beyond the housing sector. According to the Global Competitiveness Index, inadequate supply of infrastructure is among the top five most problematic factors for doing business (World Economic Forum 2018). A PPP law has been in effect since 2016 (World Bank 2017) and the largest projects have been in the power sector, with \$557 million invested in current PPPs and \$694 million invested in PPPs since 1990. Additional analytical work can determine whether the law and enabling environment are appropriate for building a pipeline of PPPs for housing infrastructure.

Careful budgeting will be required to ensure that the rate of land and services delivery expands year-on-year. Developer incentives, the expansion of infrastructure and serviced land, and manufacturing incentives will also require public finance.

AREAS FOR FURTHER ANALYSIS

There is a need for further analysis of some key areas, outside the scope of this deep dive.

DEFINE HOUSING AFFORDABILITY VERSUS AFFORDABLE HOUSING

Further analytics are needed on the specifics of housing affordability in Rwanda. The definition of Rwanda’s “affordable housing market” must



be reviewed. Understanding what price points are affordable to what proportion of the population is a first step needed for more affordable housing solutions.

ASSESS AFFORDABLE HOUSING PILOTS

There has been no comprehensive evaluation of pilot programs and incentives for affordable housing that have been implemented. The government should undertake a rapid assessment of existing attempts at affordable housing and their associated outcomes, to determine what does and does not work. This is important, as additional public resources are allocated to increasing the availability of affordable housing. The GoR should then use these insights to make any needed policy changes to help ensure return on public resources.

SUPPORT SELF-CONSTRUCTION

There may be opportunities to formalize some aspects of the informal, unplanned housing sector. For example, *Programa Integral de Autoconstrucción Asistida* in Mexico supports self-construction through a combination of

construction material supply, microcredit, and technical assistance (World Bank 2008).³⁹ The approach has the benefit of reducing the decades-long timeline for incremental self-construction (dependent on ongoing accumulation of savings) and providing technical assistance to maintain quality in construction.

REVIEW BUILDING CODES AND ZONING

The minimum plot-size requirement in the Kigali master plan present a challenge for building medium- to high-density housing. There is room for urban planners and policymakers to proactively identify sites for medium- to high-density housing, offer incentives to develop those sites, and stimulate consumer demand for the output. Analyzing the process map of building regulations and compliance is recommended for follow-up analysis, including improving public awareness of the rules and processes.

APPENDIXES

WORLD BANK GROUP STRATEGY AND PORTFOLIO IN RWANDA

Despite being a small country, the World Bank Group's strategy and portfolio in Rwanda is extensive. Key World Bank Group projects that aim to help the government strategy by addressing the above-mentioned constraints include housing finance, energy, skills, agriculture, and tourism.

ENERGY SECTOR DEVELOPMENT POLICY OPERATION – This program supports fiscally sustainable expansion of electricity services in Rwanda. This operation is built around two pillars: (i) contain the fiscal impact of the electricity sector; and (ii) improve the operational efficiency, affordability, and accountability of electricity services. The series supports an enabling environment for private sector participation across the sector value chain, ensuring competitive procurement of new generation capacity, and attracting credible solar companies in the off-grid space.

PRIORITY SKILLS FOR GROWTH P-FOR-R – This program-for-results project aims at expanding opportunities for the acquisition of quality, market-relevant skills in selected economic sectors, including energy, transport and logistics, and manufacturing. The project supports reinforcing governance of the skills development system; provision of quality training programs with market relevance; and expanding opportunities for continuous upgrading of job-relevant skills for sustained employability.

AGRICULTURE P-FOR-R 2 – This program aims to promote the commercialization of agriculture value chains in Rwanda. The project's action plan includes external capacity support, agricultural finance guarantees schemes, ensuring gender equality in all programs and services of the Ministry of Agriculture (MINAGRI), strengthening the monitoring and reporting on nutritional food security by MINAGRI, with MINAGRI to mainstream climate change into the sector's planning, budgeting, monitoring and implementation, public expenditure reviews, among others. It supports the implementation of the government's fourth Strategy Plan for Agriculture Transformation (PSTA4).

HOUSING FINANCE INVESTMENT PROJECT FINANCING – The Rwanda Housing Finance project, currently in the pipeline, targets households that are unable to access and/or afford formal housing finance. The project targets Rwandans with incomes ranging between FRW 200,000–600,000 (\$250–750) per month, which corresponds to the 50th–80th percentiles in the income distribution for Kigali. The project does not extend to the poorest population segments, but targets growing urban middle class, in particular made up of civil servants, who are credit worthy, given job security and salaried income, yet do not currently have access to housing finance. The main project component aims to provide long-term funds for affordable housing loans issued by eligible financial institutions. The second project component aims to complement the provision of long-term financing envisaged under the first component through the provision of relevant advisory and capacity building on affordable housing and financing for financial institutions, borrowers, and key public and private sector stakeholders.

ECONOMIC INCLUSION FOR REFUGEES – The proposed project is expected to be a \$40–\$50 million operation in support of the socioeconomic inclusion of refugees and development opportunities for host communities. The project will support the government's Strategy for Economic Inclusion of refugees, which seeks to generate both self-employment and waged employment for thousands of refugees and host community members over the coming three to five years. A major part of the proposed project will support employment creation, both waged employment and self-employment, with a focus on the private sector. This will help to build self-reliance among refugees to get them off humanitarian assistance and maximize their contribution to local economic development. The strategy focuses primarily on formal sector employment opportunities, by necessity, therefore requiring strong involvement from the private sector. Proposed activities in this regard include market-linked job skills and referral and investments in economic infrastructure. The project is being prepared under the IDA 18 Refugee Window.

DEFINITION OF SECTORS

Sector typology for Rwanda CPSD	IFC sectors	IFC broad sectors
Finance and insurance	Finance and Insurance (O), Collective Investment Vehicles (P)	FIG
Mining	Oil, Gas, and Mining (B)—excludes oil and gas	INRR
Energy	Electric Power (V)—includes oil and gas (part of B)	INRR
Water and sanitation	Utilities (C)	INRR
Transport	Transportation and Warehousing (E)	INRR
ICT infrastructure	Information (N)	
ICT services	Professional, Scientific and Technical Services (R)	
Agribusiness	Agriculture and Forestry (A), Food and Beverages (F)	MAS
Light manufacturing	Textiles, Apparel, and Leather (K)	MAS
Other manufacturing	Chemicals (G), Nonmetallic Mineral Products (H), Primary Metals (I), Pulp and Paper (J), Plastics and Rubber (L), Industrial and Consumer Products (M)	MAS
Wholesale and retail trade	Wholesale and Retail Trade (Q)	MAS
Construction and real estate	Construction and Real Estate (D)	MAS
Tourism	Accommodation and Tourism Services (U)	MAS
Education	Education Services (T)	MAS
Health	Health Care (S)	MAS

Note: Other manufacturing excludes Agribusiness and Light Manufacturing. FIG = Financial Institutions Group; INRR = Infrastructure and Natural Resources; CTT = Communication Telecom and Technology.

INDIVIDUAL SECTOR ANALYSIS FOR THE SECTOR SCAN

Oil, Gas, and Mining

Rwanda's mining exports are dominated by tin, tungsten, tantalum, and gold. With the establishment in 2017 of the Rwanda Mines, Petroleum and Gas Board, the government projects a significant increase of the mining sector's contribution to GDP and exports. However, there are no existing diagnostics or comprehensive geological surveys, and the exact potential of the mining sector is unknown. A government target of increasing mining revenues from \$100 million to \$1.5 billion by 2024 has been set (Kwibuka 2017). Any potential increase would materialize only from new investment in the sector and the government is actively seeking to attract foreign direct investment (FDI) into the sector (Intergovernmental Forum on Mining, Minerals and Sustainable Development 2017). However, there are gaps in market analysis and limited understanding of investment attraction and promotion in the sector. These gaps are compounded by a lack of intergovernmental coordination and insight into the potential environmental impact.

Value addition in the extractive industries sector is a growing government priority and likely to be featured in Vision 2050. The sector has demonstrated excessive volatility because of swings in international commodity prices. While the potential for development impact of the sector may be moderately high, the feasibility of a deep dive at this moment is not so clear. Rwanda only recently commissioned a geological survey that will provide clearer answers about the potential of mining.

TABLE C.1 DEVELOPMENT IMPACT: OIL, GAS, AND MINING

Criteria	Weights (%)	Development impact (1-5)	Explanation
Inclusion and jobs	25	3	The sector has a low share in employment, accounting for less than 2 percent of the employed labor force (World Bank 2017f), and its indirect job creation effects are also relatively low, with 1 direct job creating slightly more than 3 indirect jobs. However, the sector offers employment opportunities for low-skilled labor which has inclusion benefits. The sector's share in consumption is also very low.
Economic growth	15	4	The sector has low output and relatively high GDP multipliers, indicating high potential to contribute to economic growth. However, commodity prices can be volatile.
Competitiveness and productivity	25	3	Though value added per worker is higher than average in the economy, the sector's effect on inputs for other sectors is low as there are weak backward linkages.
Integration and connectivity	10	3	The government expects to issue 50 new mining licenses, including for gold, tin, and tantalum (Benton 2018). Imports are a relatively high share of the inputs needed for the sector and a majority of the output is exported. FDI inflows are extremely concentrated, going to only one firm.
Resilience and stability	15	2	Growth in sector exports would lead to further concentration of export products. Unprocessed natural resources constitute the entirety of exports from the sector.
Environmental sustainability	10	1	The sector has significant and usually negative impact on the environment.
Average	–	2.8	

TABLE C.2 FEASIBILITY: OIL, GAS, AND MINING

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	2	2	In the absence of comprehensive geological surveys, it is difficult to ascertain the potential feasibility of the sector.
PRODUCTION FACTORS			
Labor and skills	3	3	Growth in labor productivity is low as is the value added per capita in the sector. Rwanda may have significant mineral reserves, but adequate diagnostics have not been finalized yet to render the sector feasible in the short term.
Existing capabilities	3	3	
Natural endowment and geography	3	3	
KEY INPUTS			
Energy	3	3	This is an energy intensive sector and sector exports rely on a robust transport network. While finance is available for the sector, NPLs are relatively high. The government is looking to support FDI in the sector.
Transport	3	3	
Finance	3	4	
Intermediate inputs	3	3	
INSTITUTIONS			
Regulatory barriers	3	4	Cost for a construction permit is very high in the sector even as other regulatory barriers are low. In general, rule of law and property rights are good, but sector has moderately high cost to resolve insolvency and enforce contracts.
Rule of law and property rights	4	4	
Market contestability	4	4	
Macroeconomic and political stability	4	4	
Average	3.2	3.3	

Finance and Insurance

Financial inclusion has increased recently with 50 percent of adults having access to accounts in 2017, compared with 42 percent in 2014 (Findex 2017). Financial products and services have similarly become more diversified. Among young adults, more than 32 percent had used digital payments in the past year in 2017 compared with 14 percent in 2014, who had used digital payments in the year prior (Findex 2017). In the 2011 Enterprise Survey, nearly one-quarter of SMEs report access to finance as the biggest obstacle for their business, even as more than 45 percent of firms report having access to a bank loan or line of credit compared with only 22 percent in Sub-Saharan Africa (Enterprise Surveys 2011). This potentially indicates a mismatch between financial products and services available in the market and demand from the SMEs. But more recent data are not available. Several initiatives are underway to address this gap; in 2018 the European Investment Bank financed lines of credit for SMEs, with the Development Bank of Rwanda and I&M Bank Rwanda (Sabiiti 2018).

Domestic credit to the private sector by banks is nearly 21 percent of GDP (2017) compared with 88 percent global average (2016) and almost 32 percent in Sub-Saharan Africa in 2017 (World Bank 2018). According to the IMF, the banking sector is well-capitalized and average capital adequacy ratios at 21.4 percent are above the 15 percent minimum threshold. However, return on assets has fallen to 1.1 percent as a result of loan write-offs and higher provisioning (IMF 2018). The Bank of Kigali is the largest bank, with 30 percent market share. There are 14 insurance companies in the country (National Bank of Rwanda 2017) and nonlife insurance premium volume was less than 1 percent in 2014 (World Bank 2017).

However, access to long-term finance remains low and high cost of finance is a binding constraint that cuts across sectors, making the desirability to address these issues in the sector high. The high cost of finance does not reflect inefficiency in the banking sector, but challenges to reach economies of scale given the number of current actors in the

sector. The availability of long-term finance depends on the depth of financial and capital markets, and regional and international flows of funds, as well as the legal and regulatory framework of the financial sector. Capital markets continue to be underdeveloped. Feasibility to address these constraints in three to five years is therefore considered moderate. A recent background note on the financial sector was undertaken for the *Rwanda Drivers of Growth* study. Moreover, a housing finance project is underway, which looks closely at issues around long-term finance.

There are opportunities in the fintech space in Rwanda, with the government investing in an integrated payments-processing system and a policy emphasis on scaling up use of digital payments (Tumwebaze 2018). Foreign investment in the banking sector is also on the uptick with the entry of Bank of Morocco and other investors (Holmeý 2017).

TABLE C.3 DEVELOPMENT IMPACT: FINANCE AND INSURANCE

Criteria	Weights (%)	Development impact (1-5)	Explanation
Inclusion and jobs	25	3	Moderate levels of employment generated by the sector, which employs less than 1 percent of the employed labor force (World Bank 2017f). However, value added per worker is among the highest.
Economic growth	15	4	Relatively low levels of output although GDP multipliers are relatively on the higher side. However, this sector is an enabler for all other sectors and as such has significant spillover effects on other critical sectors of the economy.
Competitiveness and productivity	25	3	High value added per worker and high impact on input prices in other sectors. In 2016, workers employed in the sector produced \$91,000 per year compared with \$885 in agriculture (Danish Trade Union Council for International Development Cooperation 2016). But overall output is low.
Integration and connectivity	10	3	The sector receives the second-highest levels of FDI inflows (National Bank of Rwanda 2017) and it has the second-highest number of projects financed by FDI, although concentrated entirely in the financial services subsector with no insurance projects.
Resilience and stability	15	3	Cross-cutting sector which has implications for the resilience and stability of the broader economy the country.
Environmental sustainability	10	3	The sector has limited direct environmental impact and indirect impact depends on where the finance is allocated.
Average	–	3.15	

TABLE C.4 FEASIBILITY: FINANCE AND INSURANCE

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	3	3	The government's ongoing efforts to reach 80 percent financial inclusion may stimulate greater demand for financial products and services.
PRODUCTION FACTORS			
Labor and skills	3	3	Pool of skilled labor expected to grow in the long-term as efforts on improving education outcomes are being undertaken. There is a significant presence of foreign skilled labor in this sector with 33 percent of foreign labor located in this sector. Most female foreign skilled labor is also located in this sector.
Existing capabilities	3	3	
Natural endowment and geography	3	3	

Table continues next page

TABLE C.4 (CONTINUED)

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
KEY INPUTS			
Energy	3	3	The sector receives significant levels of FDI inflows (BNR 2017a). Regional connectivity would increase Rwanda's access to regional financial hubs and potentially diversify the products and services in the local market.
Transport	3	4	
Finance	3	3	
Intermediate inputs	3	3	
INSTITUTIONS			
Regulatory barriers	3	3	The number of banks rose to 17 in 2017. NPLs for banks have recently been reduced from 8.2 percent in June 2017 to 7.6 percent in December 2017; but NPLs have risen for microfinance banks. Digital payments are rapidly growing in Rwanda, with active mobile money holders rising 13 percent between 2016 and 2017 (BNR 2018).
Rule of law and property rights	3	3	
Market contestability	3	3	
Macroeconomic and political stability	3	3	
Average	3	3.1	

Water and Sanitation

One of the main objectives of the GoR's Second Economic Development and Poverty Reduction Strategy and Vision 2020 is to ensure safe, reliable, and affordable water supply services to all of Rwanda's population. Challenges include high/subsidized end-user tariffs, insufficient distribution networks, and sector inefficiencies, including institutions. Rwanda has large and considerable water sources. These include rainfall between 900 and 1,500 mm per year, lakes, streams, and watercourses (MINECOFIN 2012). 87.1 percent of Rwandan citizens live in dwellings with improved water, and 87.3 percent – live in dwellings with improved sanitation (EICV5).

The water sector is a traditionally difficult target for private infrastructure financing, due to constraints on tariff affordability and other complexities of the sector. The Water and Sanitation Corporation in Rwanda is the primary utility and it reported that nearly 40 percent of all water supplied in 2017 was nonrevenue water due to system issues and illegal connections (RURA 2017). The World Bank has recently launched one of Sub-Saharan Africa's first water PPP in Rwanda, Kigali Bulk Water Project (Cattaneo 2018). Another project in collaboration with the African Development Bank and the European Investment Bank to rehabilitate and extend the water supply network in Kigali and its suburbs will provide access to clean water and better sanitation services for more than 1.3 million Rwandans (Tumwebaze 2018). While the government remains open to PPPs, there are challenges in implementation, for example, limited skills to develop PPPs (MININFRA 2018).

There has been some recent growth of service provision in sanitation with the number of licensed waste collectors rose to 22 (RURA 2017). The government is also undertaking studies to research low-cost WASH technologies, an area where the private sector can contribute significantly in bringing innovations to market.

TABLE C.5 DEVELOPMENT IMPACT: WATER AND SANITATION

Criteria	Weights (%)		Development impact (1-5)	Explanation
Inclusion and jobs	25		3	The sector only employs about 0.4 percent of the employed labor force (World Bank 2017f). Access to safe water and sanitation facilities has improved in recent times but remains a challenge in rural areas in particular.
Economic growth	15		3	GDP multiplier for water is moderately high although output is on the low end among other industries.
Competitiveness and productivity	25		2	The sector has indirect impact on competitiveness and productivity through its spillover effects on other industries that use water as an input or require robust sanitation facilities for waste management (such as chemicals and plastics).
Integration and connectivity	10		3	Water and sanitation facilities contribute to the overall industrial infrastructure which is a factor of consideration for FDI inflows. PPPs are being developed in the sector which also generate FDI opportunities.
Resilience and stability	15		4	The sector has considerable impact on the resilience of local communities (e.g., on individual health) and therefore for national resilience. Efficient management of water resources and of sanitation systems has fiscal implications (especially in the context of 40 percent water losses).
Environmental sustainability	10		4	The sector has significant environmental implications and is a priority area for managing broader environmental challenges in Rwanda.
Average		-	3	

TABLE C.6 FEASIBILITY: WATER AND SANITATION

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	3	4	Demand for water and sanitation is rising with increasing urbanization of Rwanda.
PRODUCTION FACTORS			
Labor and skills	2	3	The existing system provides reasonably good coverage and access to clean water and sanitation for a majority of the population but gaps between urban and rural access remain. Skills gaps in planning, project management and maintenance are a challenge identified in the 2016 water policy (MININFRA 2016). The government is investing in expansion of its current capabilities in terms of systems management and for more efficient use of Rwanda's considerable water resources.
Existing capabilities	3	4	
Natural endowment and geography	4	4	
KEY INPUTS			
Energy	2	2	Energy and finance are key inputs for the sector, both aspects are challenges in expanding and maintaining infrastructure.
Transport	2	2	
Finance	2	3	
Intermediate inputs	3	3	

Table continues next page

TABLE C.6 (CONTINUED)

Criteria	Feasibility (1–5)		Explanation
	Current	Expected	
INSTITUTIONS			
Regulatory barriers	3	3	Illegal water connections are a significant challenge. Right now, a combination of public and private sector operators delivers services in the sector. Decreasing fiscal space may constrain infrastructure investments; however, it would also increase space for private investment and PPPs. The 2016 water policy highlights attraction of private investment as a key component but also reiterates intention to limit private sector investment in rural water supply. The policy also commits to strengthened regulation of private sector operators in the sector.
Rule of law and property rights	2	2	
Market contestability	2	3	
Macroeconomic and political stability	3	3	
Average	2.6	3	

Energy

The energy sector is a critical enabler but cost and reliability of electricity challenge competitiveness across sectors in Rwanda, particularly manufacturing. The government has set a target for 100 percent electricity access by 2024 (USAID 2018) and is undertaking significant infrastructure investments to reach that goal. Currently, only 35.5 percent of Rwandans have access to electricity. Moreover, businesses cite power outages as the reason for 2.6 percent of annual losses (World Bank 2017).

The government’s reform program aims at balancing the triple objectives of achieving ambitious expansion targets for electricity generation and access (based on their own projections of growth of the industrial sector), while containing fiscal transfers to the sector and enhancing the affordability of electricity service for consumers. As such, the desirability to address these issues in the sector is considered high and the feasibility moderate. There is a World Bank DPO of \$125 million in preparation to support key reforms in the energy sector in Rwanda with the aim to reduce cost of energy and stabilize fiscal impact (World Bank 2017). Given this level of attention by the World Bank on addressing these constraints, energy as a deep dive sector of the CPSD is expected to have low additional value to ongoing work.

TABLE C.7 DEVELOPMENT IMPACT: ENERGY

Criteria	Weights (%)	Development impact (1–5)	Explanation
Inclusion and jobs	25	3	The combined effect of this sector on jobs is low, in fact the second lowest among all sectors, accounting for 0.3 percent of employment (World Bank 2017f). However, its spillover effects into employment in other sectors are large. Moreover, access to electricity is still relatively low and unequal in Rwanda, with access concentrated in the top two quintiles and limited access in the bottom 40 percent.
Economic growth	15	5	Energy is a critical enabler of economic activities and therefore of economic growth. This is cited as a critical constraint by firms and enhancing access to energy is a key driver of maintaining Rwanda’s upward trajectory.
Competitiveness and productivity	25	5	Improving access to electricity is important to improve Rwanda’s competitiveness and to reduce reliance on energy imports. Rwanda needs to reduce the cost, and adopt a least cost power program, even if it will require importing more electricity.
Integration and connectivity	10	5	The sector is heavily reliant on imports, with imports accounting for more than 80 percent of the inputs used by the sector. Only four projects receive almost \$800 million FDI inflows. With the planned expansion of generation and distribution and diversification into renewable sources of energy, there is scope for greater integration in Rwanda.

Table continues next page

TABLE C.7 (CONTINUED)

Criteria	Weights (%)	Development impact (1-5)	Explanation
Resilience and stability	15	4	Enhancing supply according to the least cost power program (including electricity imports), and more equal distribution of electricity, has potential to reduce dependence on fuel imports and boost resilience to external factors.
Environmental sustainability	10	4	The sector has significant environmental impact, although there is great potential for Rwanda to enhance the share of sustainable renewable energy. This is also a stated priority in the preparation work being undertaken for Vision 2050 (MINECOFIN 2016).
Average	–	4.25	

TABLE C.8 FEASIBILITY: ENERGY

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	3	4	Demand for investments and support to the sector is only likely to grow as does Rwanda's economic growth.
PRODUCTION FACTORS			
Labor and skills	2	2	FDI is high while domestic investment in the sector is limited.
Existing capabilities	2	2	
Natural endowment and geography	2	2	
KEY INPUTS			
Energy	2	2	With heavy reliance on imports (such as fuel for local electricity consumption), Rwanda's energy sector remains constrained. Energy imports increased by 6 percent in value even as volume fell by 0.8 percent (World Bank 2017). However, hydroelectric power and renewable energy sources have the potential to transform the sector and somewhat reduce reliance on imports. This is already happening on large scale.
Transport	2	2	
Finance	3	3	
Intermediate inputs	2	2	
INSTITUTIONS			
Regulatory barriers	3	3	Fiscal impact of the government's energy supply expansion plan is large, and the transfers needed to maintain the current approach to financing and operations may increase further. Between 2008 and 2016, more than 15 percent of public investments were allocated to the energy sector, the largest sectoral allocation (World Bank 2017). This will have significant macroeconomic impact. The ongoing energy DPO is already looking at these concerns and therefore additional work in the sector would have limited feasibility.
Rule of law and property rights	3	3	
Market contestability	2	2	
Macroeconomic and political stability	2	2	
Average	2.3	2.4	

ICT Infrastructure

Information and communication technology (ICT) is an important sector for the government, in the context of two of its development objectives: to become a modern and digital economy, and an enabler of exports of ICT-enabled services (for example, BPO). The GoR has invested heavily in ICT infrastructure; the network of fiber-optic cables has been completed across the country and internet penetration is at 55 percent with phone penetration at 81 percent (International Telecommunication Union 2017).

However, costs are high, and uptake remains low. Rwanda ranks 80 out of 143 countries on the WEF's network readiness index (World Economic Forum 2016), with infrastructure being a particular weakness (where Rwanda is

ranked 106). While mobile network coverage is high and mobile cellular subscriptions exceed 81.8 per 100 inhabitants (RURA 2018), lack of local content, poor literacy, high broadband costs, low access to electricity, international internet bandwidth and limited availability of secure internet servers, holds Rwanda back. Low urbanization rates and poor consumer readiness (literacy and foreign language skills) also limit penetration. For example, mobile broadband subscriptions per 100 inhabitants are only 35 and only 46 percent of individuals use the internet (BUSR 2018). The potential for development gains in addressing these challenges is high, given the importance of the sector for growth, value added, and skilled jobs. Last mile connectivity is very low, leading to low levels of individual and business usage.

This sector may present an opportunity for private investment. Rwanda has a strong regulatory environment with an independent, proactive, forward-looking regulatory, and a government that has committed to develop ICT and liberalize the sector. However, the sector is challenged by an anti-competitive environment. There is a quasi-monopoly around 4G/LTE, which resulted from a joint venture between the GoR and a Korean company (KTRN), which developed the infrastructure with a guarantee of exclusive access to both the fiber network, as well as the 4G/LTE for 25 years. This makes feasibility of private sector investment in platforms that rely on this infrastructure a challenge and in fact merits research into the impact of such a monopoly—whether it serves consumers and the Rwandan economy well. The private sector in 3G mobile is well established, although a duopoly has recently been created with the merger of the second and third top players in the market (Tigo and Airtel when Airtel took over / acquired Tigo in December 2017).

TABLE C.9 DEVELOPMENT IMPACT: ICT INFRASTRUCTURE

Criteria	Weights (%)	Development impact (1–5)	Explanation
Inclusion and jobs	25	2	The information and communication sector has a 0.5 percent share in employment (World Bank 2017f). Setting up ICT infrastructure is labor-intensive and provides considerable employment, though only for the duration of the construction. The ICT sector overall, has a high level of induced employment. For inclusion, Rwanda has set up a universal services and access fund to ensure internet infrastructure for example is available to all (Alliance for Affordable Internet 2017).
Economic growth	15	4	The sector is an important contributor to economic growth through its enabling role for other sectors.
Competitiveness and productivity	25	4	Rwanda’s aim to be a knowledge economy relies heavily on the quality of and access to ICT infrastructure, and its spillover effects have considerable impact on the competitiveness and productivity of other sectors.
Integration and connectivity	10	3	The costs of setting up ICT infrastructure are high due to Rwanda’s landlocked location which necessitates dependence on neighboring countries for fiber optics (by way of example). This may also be a strategic opportunity as Rwanda could be a communications transit hub for the region under a single digital market.
Resilience and stability	15	2	ICT infrastructure may potentially boost resilience through improved access to modern technology for traditionally isolated communities. However, that would depend to a considerable extent on the ability of the population to have the skills to leverage the infrastructure.
Environmental sustainability	10	3	There may be some environmental impact for example in setting up of fiber optic cable.
Average	–	3	

TABLE C.10 FEASIBILITY: ICT INFRASTRUCTURE

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	3	4	Demand for ICT is high in Rwanda, with its growing youth population and active efforts to diversify the economy.
PRODUCTION FACTORS			
Labor and skills	3	3	Skilled labor is needed to set up ICT infrastructure and there is shortage of skilled technicians and other profiles. ICT infrastructure is particularly challenging to set up in hilly terrain where a significant proportion of Rwanda's unconnected population resides.
Existing capabilities	2	2	
Natural endowment and geography	2	2	
KEY INPUTS			
Energy	2	3	Energy is an integral input for setting up ICT infrastructure as is finance. Both are constraints for Rwanda.
Transport	2	2	
Finance	3	3	
Intermediate inputs	2	2	
INSTITUTIONS			
Regulatory barriers	1	1	The sector is highly concentrated with MTN accounting for 42 percent of market share. Last mile connectivity also remains an issue.
Rule of law and property rights	3	3	
Market contestability	1	1	
Macroeconomic and political stability	3	3	
Average	2.25	2.4	

Transport

The transport sector is another critical enabler, particularly given Rwanda's landlocked location and reliance on imports for many sectors. Improvements in logistics have been a top policy priority for GoR, with Vision 2020 emphasizing the need to maintain road infrastructure and extend regional transport links through rail and air. Currently, there is no railway network in Rwanda; efforts are underway to develop networks in the central (through Tanzania) and northern corridors through Uganda and Kenya (MININFRA). However, the capital investment requirements are enormous and, despite high trade volumes as a percentage through one corridor, has not demonstrated a justifiable rate of return. This is especially important as 80 percent of Rwanda's international trade is conducted through Tanzania.

A recent World Bank Transport Sector Development Project led to the rehabilitation and maintenance of the domestic road network with 62 percent of the paved network in good condition (World Bank 2016). However, there is a need to maintain the network on an ongoing basis. This is a fiscal issue with high levels required to maintain road network asset valuations. The last strategic plan developed in 2012 found about 41 companies working in the sector (MININFRA 2013). Land transport is the most crucial for Rwanda's trade—in the third quarter of 2017, 85 percent of imports and 60 percent of exports were transported over land. This also indicates that land transport is more important for exports (NISR 2017).

TABLE C.11 DEVELOPMENT IMPACT : TRANSPORT

Criteria	Weights (%)	Development impact (1-5)	Explanation
Inclusion and jobs	25	3	While direct jobs in the transport sector are relatively low, accounting for only 4 percent of the employed labor force, it has considerable indirect job creation effects (World Bank 2017f). It also has significant inclusion impact, especially in the case of roads.
Economic growth	15	4	Transport is a critical enabler of economic growth, through its impact on other sectors, physical mobility of people, goods, and inputs.
Competitiveness and productivity	25	4	The sector is an essential input into many other sectors and is a challenge due to Rwanda's landlocked location and lack of regional rail links, making import of inputs (and exports) expensive.
Integration and connectivity	10	4	The sector determines domestic and regional connectivity and is a key constraint to bringing down the cost of imports and domestic goods. With planned investments in developing regional rail links and air transport, the sector is likely to boost integration and connectivity.
Resilience and stability	15	3	The internal road network connecting rural and hillside communities to infrastructure and facilities are a key component of resilience.
Environmental sustainability	10	3	Transport has a significant impact on the environment and use of more energy efficient modes of transport can contribute to overall environmental sustainability in the country.
Average	–	3.5	

TABLE C.12: FEASIBILITY: TRANSPORT

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	3	3	Demand is high for the sector as Rwanda's economy continues to grow and the government prioritizes trade linkages. Moreover, transport is also an important component of the special economic zones model and as the government seeks to expand SEZs, a better transport network will be needed.
PRODUCTION FACTORS			
Labor and skills	3	3	The sector is currently underdeveloped. Skilled technicians and engineers are in limited supply and while education reforms and TVET programs are underway to build capacity, these will yield results only in the long term. Connecting rural communities to economic opportunities is an important priority for the government; expansion, maintenance and construction of feeder roads were undertaken as part of this approach. However, there remain hillside rural communities that are not well-connected or where the terrain raises the costs of transport infrastructure considerably.
Existing capabilities	2	2	
Natural endowment and geography	2	2	
KEY INPUTS			
Energy	2	2	Energy and finance are constraints in expanding the transport sector in Rwanda. Large government investments have been made in the sector and more are planned. However, the fiscal impacts of large transportation investments may constrain them going forward. In this context developing new models of PPPs and expanding the role of the private sector in infrastructure provision and maintenance may offer feasible opportunities. Intermediate inputs like construction materials are expensive.
Transport	2	2	
Finance	3	4	
Intermediate inputs	2	3	

Table continues next page

TABLE C.12 (CONTINUED)

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
INSTITUTIONS			
Regulatory barriers	3	3	Investments in transport infrastructure are necessarily large and have significant fiscal implications. Fiscal reforms may constrain the space available for large-scale investments. Commercial traffic is often delayed by weight points, among other factors (U.S. Department of Commerce 2017). Nontariff barriers are high for the sector.
Rule of law and property rights	3	3	
Market contestability	3	3	
Macroeconomic and political stability	2	2	
Average	2.5	2.7	

ICT Services

ICT is a priority sector for the GoR, and significant investment in ICT infrastructure has been made with the goal to increase ICT adoption domestically, as well as support ICT-enabled services exports (as noted above). In 2017, 5,420 ICT companies were registered in Rwanda and the ICT sector made an estimated 3 percent contribution to GDP (International Telecommunication Union 2017).

The potential for development impact of developing this sector is high, as it supports job creation, information technology-enabled developments, entrepreneurship, and exports. The GoR is in the process of securing private finance to develop a Kigali Innovation City, which aims to bring together higher education, research institutions and private sector. Digitization of government services is underway—the community-based health insurance payment mechanisms, for example, have recently been digitized via a private sector vendor (KT Press 2018). A science, technology, and innovation policy is being developed (Bizimungu 2018), and a National Innovation and Research Fund has already been established. A Center of Excellence in ICT has been set up in collaboration with Carnegie Mellon University and African Development Bank (MINEDUC).

The prospects for scaling up of the sector to achieve both outcomes are nevertheless confronted with challenges, including on the demand and supply sides, as highlighted in an initial background study undertaken on Rwanda’s ICT sector for the Drivers of Growth report. Most notable are ICT-related skills, remaining infrastructure gaps, high infrastructure costs, financing for entrepreneurs, and local content availability. The feasibility of addressing these constraints in the short run are low (such as cost, skills) to moderate (for example, financing).

ICT skills gaps challenge in particular the innovation ecosystem, which Rwanda is working to address (International Telecommunication Union 2017). A national research and innovation fund is being established to stimulate development of the sector (Bizimungu 2018). The Smart Village Initiative has also been launched to address the digital skills gap in rural areas and the Digital Ambassadors Programs aims to train 5 million Rwandans by 2022 (Xinhua Net 2018).

TABLE C.13 DEVELOPMENT IMPACT: ICT SERVICES

Criteria	Weights (%)	Development impact (1-5)	Explanation
Inclusion and jobs	25	3	The sector currently accounts for only 0.5 percent employment (World Bank 2017f), but has the potential to expand, given the right level of ICT skills in the country (NISR 2017). The expansion of mobile money and digital solutions is an indicator of the potential contribution of ICT services to inclusion. Rwanda’s Utilities Regulation Authority funds programs to facilitate access to ICT services in order to boost inclusion (Alliance for Affordable Internet 2017). Related programs such as “Girls in ICT Rwanda” support the development of ICT skills among girls and help address the digital gender gap. However, a 1-gigabyte mobile prepaid plan (3G network) costs upwards of 20 percent of average monthly income (Alliance for Affordable Internet 2017).

Table continues next page

TABLE C.13 (CONTINUED)

Criteria	Weights (%)	Development impact (1-5)	Explanation
Economic growth	15	2	With limited broadband coverage, the sector is yet to be an important contributor to economic growth. However, it is a critical enabler for other sectors.
Competitiveness and productivity	25	2	ICT services like internet and hosting remain relatively expensive in Rwanda, which constrains their usage for a large part of the population (Muvunyi 2017). This in turn restricts the ability of businesses to hire ICT professionals.
Integration and connectivity	10	2	ICT services in general boost connectivity and in Rwanda's case, its landlocked location would be less of an issue for export of ICT services than for goods that need physical mobility. However, given the current cost of the ICT infrastructure and level of skills available in the local economy, the role of the sector in global integration may emerge in the medium term.
Resilience and stability	15	3	Access to ICT services is increasingly a key component of resilience.
Environmental sustainability	10	3	There is limited environmental impact of the sector.
Average	–	2.5	

TABLE C.14 FEASIBILITY: ICT SERVICES

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	2	3	Demand for ICT services is rising in Rwanda as more and more people gain access to ICT infrastructure.
PRODUCTION FACTORS			
Labor and skills	2	2	The level of ICT skills is low in the country and skilled labor for the sector is in short supply. Government efforts to facilitate greater usability of the ICT infrastructure are underway, like training 43,000 teachers to use ICT in education (Murori 2017), and may yield results over the long-term. Initiatives like kLab are aimed at creating innovation spaces where business ideas in ICT can flourish and potentially be brought to market (kLab).
Existing capabilities	2	2	
Natural endowment and geography	2	2	
KEY INPUTS			
Energy	2	2	Energy is an integral input for the sector and constraints in access to energy make it more difficult for ICT services to develop. The Republic of Korea is emerging as a major foreign investor in the tech space in Rwanda with a large telecom company, KT Corporation initiating operations in Rwanda with the aim of creating a regional hub in the country for expansion in to Africa (Crabtree 2017). The government has also set up a \$100 million venture fund to support the sector in the country (Tech Abroad 2018).
Transport	2	2	
Finance	2	3	
Intermediate inputs	2	2	
INSTITUTIONS			
Regulatory barriers	2	3	With the increasing access to ICT infrastructure, a number of tech companies are emerging in Rwanda. The government aims to support development of 100 tech companies by 2030 (Tech Abroad 2018).
Rule of law and property rights	3	3	
Market contestability	2	3	
Macroeconomic and political stability	2	2	
Average	2.1	2.4	

Tourism

Tourism has been a significant driver of services exports and growth, as well as FDI and job creation. In 2016, tourism was the fourth-largest recipient of FDI at \$4.3 million; companies receiving FDI in the sector nevertheless posted a loss at the end of the year (BNR 2017a). The sector is the largest forex earner with receipts increasing by almost 5 percent in 2016, constituting almost 5 percent of GDP (World Bank 2017).

Tourism is concentrated in two main destinations: Kigali (meetings, incentives, conferences, and exhibitions [MICE]) and the Virunga (mountain gorillas). World Bank activities have worked specifically on MICE and helped set up the Rwanda Convention Bureau in 2014 to attract more business tourism. This contributed to almost double the number of conference visitors from 17,950 in 2014 to 35,100 in 2016, and an increase in revenue from \$29.6 million to \$47 million (World Bank 2017).

A large number of tourism-focused diagnostics and advisory interventions have been completed or are ongoing by the World Bank Group, as well as other development partners. These include, exploring the potential to diversify tourism offerings by generating investments in other tourism destinations, as well as supporting the development of a regulatory agency and implementation of laws on standards to regulate the sector. Diversified tourism is an emerging priority in the preparation work being undertaken for Vision 2050 (MINECOFIN 2016).

The structure of the sector is somewhat oligopolistic, dominated by a few large firms. The number of international visitors also dropped in 2016 after a sustained increase between 2010 and 2015 (World Bank 2016). Gorilla permit prices were increased by 50 percent and then 100 percent pushing them to \$1,500, which was a policy adopted to reduce the number of visitors to gorillas while increasing revenue. Nevertheless, tourism grew rapidly and tourism revenues at \$390 million constituted the largest foreign exchange earner in 2016 (BNR 2017a). The direct contribution of the sector to GDP, however, registered an increase in 2016 and 2017, although to a lesser extent than during 2010–15 (World Travel and Tourism Council 2018).

TABLE C.15 DEVELOPMENT IMPACT: TOURISM

Criteria	Weights (%)	Development impact (1–5)	Explanation
Inclusion and jobs	25	4	The sector employs a relatively limited number of people (a little more than 200,000 accounting for less than 2 percent of employment (World Bank 2017f), though this is a large share of formal employment) and has moderate indirect employment effects, primarily due to the geographically limited nature of the sector in the country. However, given Rwanda's tourism endowments and the government's emphasis on supporting the growth of the sector, there is considerable scope for the sector to generate employment.
Economic growth	15	4	In 2015, tourism's share of GDP in Rwanda was 3.1 percent (World Economic Forum 2017) and the sector has grown considerably with a 30 percent increase over the past 2 years and gross earnings at \$400 million for the sector (Hepola 2017). As Rwanda specializes in high-end tourism (the cost of a gorilla trekking permit alone is \$1,500), GDP multipliers are relatively high for the sector. However, the high cost lowers volume. Rwanda is now the third largest destination in Africa for international conferences, coming in behind only Cape Town and Casablanca (ICCA). There may nevertheless be opportunities to develop a range of tourism products.
Competitiveness and productivity	25	3	Output is low in the sector and value added per worker is the lowest among all sectors.
Integration and connectivity	10	3	The government is planning large public investments in business tourism, including the construction of an international airport in Buge-sera. Rwandair is making Rwanda one of the best-connected cities in Africa as well as the strong "Visit Rwanda" campaign which includes a \$30 million sponsorship deal of Arsenal jerseys.

Table continues next page

TABLE C.15 (CONTINUED)

Criteria	Weights (%)	Development impact (1–5)	Explanation
Resilience and stability	15	3	The sector impacts resilience and stability through spillover effects on other sectors in the tourism value chain like agribusiness. The government has also doubled the share of tourism revenues allocated to rural communities from 5 to 10 percent (Hepola 2017). However, there is little diversification in the sector and traditional tourism continues to dominate with 29 percent of total exports (World Bank 2017).
Environmental sustainability	10	4	There is a high impact on the environment of this sector and considerable scope for positive effects through the strategic use of tourism revenues. Rwanda is doing well on this score and is ranked 18 (out of 136 countries) by the World Economic Forum's Travel and Tourism Competitiveness Report 2017.
Average	–	3.25	

TABLE C.16 FEASIBILITY: TOURISM

Criteria	Feasibility (1–5)		Explanation
	Current	Expected	
DEMAND			
	3	4	Demand for business tourism in Rwanda expected to rise as government initiatives focus on bringing more tourists into the country and Kigali ranks third in Africa in hosting meetings in 2016 (International Congress and Convention Association 2017). Similarly, traditional tourism is also expected to grow. However, infrastructure and service quality challenges are likely to remain.
PRODUCTION FACTORS			
Labor and skills	3	3	Tourism and hospitality is a priority sector for the Workforce Development Authority which undertakes extensive TVET programs to address sector-level skill gaps (Workforce Development Authority). Customer service skills are also an area where Rwanda needs to develop its existing skills.
Existing capabilities	3	3	
Natural endowment and geography	4	4	Rwanda Development Broad is working to develop the Kivu belt, connecting sites in the north and the south of the country.
KEY INPUTS			
Energy	3	4	Transport links, international and domestic, are essential and the government is investing in increasing RwandaAir routes and access points like airports to enhance Rwanda's connectivity with major international routes. The sector, despite its prominence, receives the least amount of FDI in the country (BNR 2017a).
Transport	3	3	
Finance	3	3	
Intermediate inputs	3	3	
INSTITUTIONS			
Regulatory barriers	4	4	Private sector participation in the sector is high with many small tour operators providing services.
Rule of law and property rights	4	4	The government continues to support the sector and focus on bringing in more FDI especially with the recent focus on MICE and business tourism. The fiscal impact of planned infrastructure investments such as new airports may be an area where some recalibration may happen in the context of the overall reduction in fiscal space.
Market contestability	3	4	
Macroeconomic and political stability	4	4	
Average	3.3	3.6	

Light Manufacturing

Food and beverages, textiles, and industrial and consumer goods are the most prominent subsectors in light manufacturing in Rwanda. The Vision 2020 target for contribution of industry to GDP is 20 percent.

Private investment in the light manufacturing sector (outside of agribusiness) in Rwanda is small, but Rwanda has received some new FDI in the sector of late, including in apparel, footwear, handbags, electronics and, most recently, automotive. These subsectors are considered important for Rwanda's future growth and would have important implications for export performance and inclusion through low-skill job creation, so the potential for development impact for a deep dive is moderate. In apparel, the government has subsidized training activities and offered other incentives for investment. However, there are only two major textile manufacturing companies in the country right now—UTEXRWA and C&H (G20 Compact with Africa 2016). The silk industry is small but growing, with a Korean firm investing in a factory in the Kigali Special Economic Zone and about 40 pilot silk cooperatives in the country (Ntirenganya 2017).

In electronics, a Brazilian company is assembling computers, though value addition is minimal, and supported through a government procurement contract. High transport costs, electricity costs, and import requirements are the main challenges for scaling up investment in the sector.

Volkswagen recently opened the first car plant in Rwanda with a \$20 million investment to capitalize on the potential for increased car ownership and ride sharing in Rwanda and the region (Uwiringiyimana 2018). Up to 1,000 jobs will be created and 5,000 units will be manufactured annually. Volkswagen has launched a ride sharing company aimed at serving businesses in Kigali and has plans to expand the offering to individual consumers later this year.

The recent suspension of Rwanda from AGOA is a worrying development even though the impact may be limited; Rwanda's exports to the US amounted to less than \$44 million in 2017 compared with \$600 million Kenyan exports (Dahir and Kazeem 2018).

TABLE C.17 DEVELOPMENT IMPACT: LIGHT MANUFACTURING

Criteria	Weights (%)	Development impact (1–5)	Explanation
Inclusion and jobs	25	3	Manufacturing which includes both light and other manufacturing, accounts for nearly 8 percent of employment (BNR 2018). Apparel and machinery and equipment sub-sectors provide the greatest employment currently and value-added per worker is highest in the electronic equipment subsector (World Bank Export of Value Added Database).
Economic growth	15	3	Manufacturing has limited impact on growth in Rwanda right now as evidenced by its relatively lower contribution to GDP. However, GDP multipliers for industries like beverages, paper products and apparel are relatively high, ranging from 1.68 to 1.90.
Competitiveness and productivity	25	3	Value added per worker is high in electronic equipment and motor vehicles but relatively lower in leather products and apparel.
Integration and connectivity	10	3	There is a limited role of manufacturing in exports. Leather goods is a growing industry with 72 percent of the industry output being exported. Even AGOA does not feature prominently in Rwanda's exports.
Resilience and stability	15	3	Diversification in manufacturing would have significant positive impact on resilience as Rwanda's reliance on a select number of exports. Food and beverages, pulp and paper, textiles and consumer goods offer the greatest potential.
Environmental sustainability	10	2	Manufacturing has considerable, usually negative impact on the environment.
Average	–	2.9	

TABLE C.18 FEASIBILITY: LIGHT MANUFACTURING

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	3	3	Domestic demand is unlikely to grow significantly in the short term as the domestic market remains small.
PRODUCTION FACTORS			
Labor and skills	3	3	Inadequately trained staff is a major constraint cited by 28 percent of manufacturing firms in the Enterprise Survey. This is unlikely to improve in the short term as TVET initiatives can take several years to yield benefits.
Existing capabilities	2	2	
Natural endowment and geography	2	2	
KEY INPUTS			
Energy	3	4	Light manufacturing is reliant on imports of inputs and is in fact a net importer sector (BNR 2017a). With the expansion of special economic zones and connectivity / electricity projects, constraints like high energy and transport costs may be addressed to a growing degree. Smaller firms or firms outside of these zones are likely to continue facing constraints. Access to finance is limited and highly expensive: according to the 2011 Enterprise Survey, more than 39 percent of the firms report this as a major constraint and manufacturing firms report needing collateral amounting to nearly 271 percent of the value of the loan compared to less than 214 percent for Sub-Saharan Africa. Limited FDI in the sector even as it is the third-largest recipient of FDI in the country (BNR 2017a).
Transport	3	4	
Finance	3	3	
Intermediate inputs	3	3	
INSTITUTIONS			
Regulatory barriers	3	3	Rwanda has made strides in improving business environment and is facilitating access to industrial land and inputs through the development of SEZs. Regional competition by more advanced peers like Kenya constraints ability of domestic firms to compete internationally, even under AGOA.
Rule of law and property rights	3	3	
Market contestability	3	3	
Macroeconomic and political stability	3	3	
Average	2.8	3	

Other Manufacturing

At present, manufacturing value-added constitutes almost 6 percent in Rwanda, compared with nearly 10 percent in sub-Saharan Africa (World Bank 2017). According to the Rwanda Development Board, the aim is to boost this sector's contribution to GDP to 26 percent by 2020 (Rwanda Development Board). Toward this end, the government has established a special economic zone and four industrial parks in Bugesera, Huye, Nyabihu, and Rusizi. The Kigali Special Economic Zone hosts 44 companies, which at the end of 2016 employed nearly 2 percent of permanent employees in the country and accounted for 2.5 percent of value added tax reported sales (Steenbergen and Javorcik 2017). Domestic demand, though currently limited, is likely to grow, as economic growth continues.

Development of other manufacturing subsectors and product diversification in Rwanda would also have important impacts on exports, growth, and nonagricultural jobs. But it also faces significant challenges in the near to medium term. High energy prices, limited access to long-term finance, import requirements, and transport costs challenge Rwanda's international competitiveness in heavy manufacturing. Border issues with the Democratic Republic of Congo have also negatively affected trade in the recent past (Rwanda Association of Manufacturers), and may be a recurring challenge given Rwanda's geographic location. Skills gaps may also challenge higher-sophisticated manufacturing sectors.

TABLE C.19 DEVELOPMENT IMPACT: OTHER MANUFACTURING

Criteria	Weights (%)		Development impact (1-5)	Explanation
Inclusion and jobs	25		2	The share of employment in manufacturing is fourth in Rwanda, at almost 8 percent (this, however, includes light manufacturing as well) (BNR 2018). The chemicals sub-sector for example employs about 4,000 people and value addition per worker is moderately high (World Bank Labor Content of Exports Database, World Bank Export of Value Added Database). However, it is uncertain the potential of the sector as a source of employment growth.
Economic growth	15		3	The sector can potentially contribute to economic growth through its value-added activities. At present however, GDP multipliers for the sector are low. In the second quarter of 2018, manufactured goods and machinery and transport equipment accounted for the third-largest share of exports of goods (NISR 2018).
Competitiveness and productivity	25		3	Manufacturing can be a significant contributor to national competitiveness. There is potential to improve product diversification in this sector, but the challenges range from limited domestic markets to low levels of skilled labor and technology.
Integration and connectivity	10		3	While there is potential for export in this sector, achieving this potential would require significant progress on export diversification and in exports more broadly; exports to GDP ratio lower for Rwanda than for peers that are similarly land locked (Calabrese, Papadavid, and Tyson 2017).
Resilience and stability	15		2	Diversification of exports would boost resilience. Sectors that offer opportunities, based on a product space analysis, include simple leather products, chemicals, and textiles (Hausmann and Chauvin 2015).
Environmental sustainability	10		2	Heavy manufacturing has considerable environmental impacts due to its high energy needs and waste generation.
Average	–		2.5	

TABLE C.20 FEASIBILITY: OTHER MANUFACTURING

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	2	3	Domestic demand is unlikely to rise significantly in the short term, given the small domestic market. However, there may be opportunities for regional exports.
PRODUCTION FACTORS			
Labor and skills	2	2	Low levels of skilled manufacturing labor and low levels of innovation and technology use are challenges for the sector. While education and TVET programs are being undertaken to address this, the results may not manifest at scale in the next three years. Rwanda's land locked location is a challenge that may potentially be addressed through planned transport investments.
Existing capabilities	2	2	
Natural endowment and geography	2	3	
KEY INPUTS			
Energy	2	2	Access to energy is a big challenge in Rwanda. As structural reforms are being undertaken to address the challenge in the medium to long term SEZs are being developed to provide short-term solutions like reduced tariffs for industry (Bishumba 2018). Intermediate inputs rely on imports which makes the sector dependent on global price changes. Manufacturing is the third-largest recipient of FDI in the country (BNR 2017a).
Transport	2	2	
Finance	2	3	
Intermediate inputs	3	3	

Table continues next page

TABLE C.20 (CONTINUED)

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
INSTITUTIONS			
Regulatory barriers	3	3	SEZs and other government interventions help to drive manufacturing expansion in Rwanda and address challenges in access to land.
Rule of law and property rights	3	3	
Market contestability	2	3	
Macroeconomic and political stability	3	3	
Average	2.3	2.67	

Education

Rwanda has made some progress on the education front, with increased provision of services, primarily by the government and more than 13 percent of the national budget dedicated to education in 2017-18 (MINEDUC 2017). The country has met the universal primary education goal of the MDGs and has achieved gender parity, a tremendous achievement (Unicef Rwanda). Enrolment rates are up, thereby increasing access to education nationally, but quality of education remains a concern with a pupil-to-qualified-teacher ratio of 62:1 (Unicef Rwanda). To this end, the government's Education Sector Strategic Plan includes a special focus on quality of education and the Forward-Looking Joint Sector Review of Education 2017/18 highlights the need to maintain investments in quality and boost engagement on science, Technology, Engineering and Mathematics, which is also in line with the focus on boosting ICT services in the country (MINEDUC 2017).

Private sector provision of higher education is nascent in Rwanda. In part, this is a result of Rwanda's small market, small economy, and poor educational outcomes, which limit domestic demand for higher education. Enrolment in tertiary education was at 8 percent in 2016. Fees are high as a result of low economies of scale. Low incomes also challenge fees that individuals can pay, with limited ability to borrow from banks for education expenses; moreover, the recently introduced 12-year basic education policy has led to the exit of many private sector providers unable to compete with lower-cost public sector provision of education. Nonpublic institutions for higher education in Rwanda today prevail largely through support from development partners. This sector is not considered a short- or medium-term area for private sector engagement, including IFC engagement. Potential for private sector to participate in skills development through the TVET system would be assessed in the context of deep dives in other sectors (rather than a deep dive in itself).

TABLE C.21 DEVELOPMENT IMPACT: EDUCATION

Criteria	Weights (%)	Development impact (1-5)	Explanation
Inclusion and jobs	25	4	The sector employs less than 4 percent of the total employed labor force but has high indirect job creation effects through the spillovers of an educated and literate labor force (World Bank 2017f).
Economic growth	15	4	Relatively high GDP multiplier effects through the spillover effects of the education into other sectors.
Competitiveness and productivity	25	3	Relatively low value-added per worker in education, although the sector has considerable impact on worker productivity and therefore spillover effects into other sectors, especially the TVET education system.
Integration and connectivity	10	2	Low levels of FDI inflows to the sector into only three projects and, in fact, the private sector has recently declined in the sector. The public sector education system receives considerable help from development partners and external funders.

Table continues next page

TABLE C.21 (CONTINUED)

Criteria	Weights (%)	Development impact (1-5)	Explanation
Resilience and stability	15	3	Education boosts economic opportunities, which in turn lead to greater resilience, but currently also has significant fiscal impact due to its large share in the government budget.
Environmental sustainability	10	3	Limited environmental impact.
Average	–	3.3	

TABLE C.22 FEASIBILITY: EDUCATION

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	2	2	Demand for education especially at tertiary level is low due to low quality products.
PRODUCTION FACTORS			
Labor and skills	2	2	The quality of education system is low due to limited labor productivity in the sector. Capital per worker is lowest in the sector.
Existing capabilities	2	2	
Natural endowment and geography	3	3	
KEY INPUTS			
Energy	3	3	Obtaining electricity is very expensive. Internet and logistics infrastructure are very low for this sector. Lowest levels of domestic credit to the sector and getting credit is moderately challenging.
Transport	2	2	
Finance	2	2	
Intermediate inputs	3	3	
INSTITUTIONS			
Regulatory barriers	4	4	Role of the private sector is very limited and government provision of education dominates. More recently, private schools have seen a spate of shutdowns as public competition increases (Kanamugire 2017).
Rule of law and property rights	3	3	
Market contestability	1	1	
Macroeconomic and political stability	4	4	
Average	2.6	2.6	

Health

Rwanda's expenditures on healthcare are higher than the regional average, at 7.5 percent of GDP, but are lower than the world average of 10 percent (World Bank 2015). Financing for the health system comes from different sources: budget transfers, mandatory insurance coverage, and donor contributions. Domestic spending comprises a majority of health spending (62 percent) with funding from abroad plugging the gap (African Strategies for Health 2016). The government is also the largest buyer of healthcare in the country and government expenditures are only slightly lower than out-of-pocket health expenditures (Institute for Health Metrics and Evaluation 2016).

Standards of healthcare have risen in the recent past as evidenced by the steady growth in life expectancy from 48 years in 2000 to more than 67 in 2016 (World Bank 2016); and the role of the private sector in healthcare delivery in Rwanda is still developing. While there is interest in supplementing government provision of healthcare with private sector services, and there are several private entities such as labs that deliver health services, the overall number of providers remains small (there is only one large public-private hospital in Kigali, King Faisal Hospital). Private health insurance, in particular, is underutilized (Ministry of Health 2014).

The Ministry of Health is extending its work with the private sector on increasing private sector participation in service provision (Ministry of Health 2017). Challenges include the ability to pay, insurance coverage for private facilities, reimbursement policies, availability of staff, the cost of importing equipment, and other regulatory issues. It is unlikely that the scope to scale up private sector investment in health will exist within a 3-to-5-year timeframe in Rwanda.

TABLE C.23 DEVELOPMENT IMPACT: HEALTH

Criteria	Weights (%)	Development impact (1-5)	Explanation
Inclusion and jobs	25	4	Low level of direct jobs as the sector accounts for less than 2 percent of employment but its employment multiplier is relatively high, highlighting its role as an indirect job creator (World Bank 2017f).
Economic growth	15	4	GDP multiplier relatively high although output is moderate. Mostly indirect effects through contributions to the overall health and well-being of the population.
Competitiveness and productivity	25	4	Low value-added per worker but the health sector has significant indirect impact on productivity through the effects on labor productivity in general.
Integration and connectivity	10	2	Very low levels of private sector activity in the sector and low FDI inflows to only three projects. As the sector opens up and private sector activity potentially expands, there may be opportunities for greater FDI inflows.
Resilience and stability	15	3	The sector has moderate effects on resilience through its impact on individuals' ability to manage health shocks.
Environmental sustainability	10	3	Limited impact on environment from medical waste and physical infrastructure.
Average	–	3.55	

TABLE C.24 FEASIBILITY: HEALTH

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	2	3	The market size for the sector is very small as it is dominated by the public sector. However, efforts are being undertaken to expand the private sector's role although progress is slow.
PRODUCTION FACTORS			
Labor and skills	2	2	Labor productivity growth is low in the sector and capital per worker the lowest among all other sectors. While local supplier quality is good, there are very few of them in the market.
Existing capabilities	2	2	
Natural endowment and geography	2	2	
KEY INPUTS			
Energy	2	2	This sector requires considerable energy resources like electricity, which is both difficult to access and has high costs. Logistics and shipping are a particular challenge for the sector and unlikely to improve. Only moderate levels of finance are available to the sector.
Transport	3	3	
Finance	3	3	
Intermediate inputs	3	3	
INSTITUTIONS			
Regulatory barriers	4	4	While regulatory burden is low, cost to start a business in the sector and profit tax are moderately high. Similarly, insolvency costs and rate of recovery are the lowest in this sector. Competition is very low in the sector, dominated as it is by government services. This situation may change with a number of government initiatives focused on increasing private sector participation in the sector, although success is unpredictable.
Rule of law and property rights	2	2	
Market contestability	2	3	
Macroeconomic and political stability	3	3	
Average	2.5	2.67	

Retail and Wholesale Trade

The retail and wholesale trade dominate the services sector in Rwanda accounting for nearly 61 percent of enterprises in the services sector (NISR 2018) and growth in the services sector is driven primarily by the retail and wholesale trade, which grew by 19 percent in the last quarter of 2017 (KT Press 2018). As the result, the sector created the largest number of new jobs between August 2016 and August 2017 (NISR 2017) although a 2.1 percent decrease has been shown between August 2017 and February 2018 (NISR 2018) although it remains to be seen whether this downward trend continues during the remainder of the year. In 2014, Rwanda was ranked as the top retail destination in Africa (AT Kearney 2014).

In August 2017, the sector was the second-highest employment generator in the informal sector (19 percent) and the largest source of employment for international migrants (almost 27 percent of whom are employed in the sector). Women account for more than 48 percent of those employed in the sector. More than 86 percent of employment in the wholesale and retail sector is informal and 46 percent of the total employment in the sector is women in the informal sector.

However, the sector on the whole, remains underdeveloped compared with other emerging markets and there is limited presence of international brands (Knight 2016). There was a large retail market for second-hand clothing in Rwanda, although recent tariffs on imports of the same have exerted downward pressure on the market, which is believed to have disappeared as a result of the ban (Steffen 2018).

The sector has low production capacity utilization and is the second highest user of domestic Rwandan raw materials; the sector also accounts for almost 50 percent of the informal enterprises and nearly 44 percent of employment in informal sector (NISR 2018).

TABLE C.25 DEVELOPMENT IMPACT: RETAIL AND WHOLESALE TRADE

Criteria	Weights (%)		Development impact (1–5)	Explanation
Inclusion and jobs	25		3	The sector accounts for about 17 percent of employment and almost 24 percent of urban employment and 14 percent of rural employment. It has relatively high indirect employment effects (World Bank 2017f).
Economic growth	15		3	GDP multiplier for the sector is moderately high and the sector has shown highest rate of growth in the fourth quarter of 2017. The sector remains primarily informal and local traders dominate the landscape. The potential for growth is high as Rwanda's middle class grows and urbanization expands.
Competitiveness and productivity	25		3	The sector has among the lowest value added per worker. It is also constrained by challenges in energy and logistics.
Integration and connectivity	10		3	The sector relies considerably on exports and receives moderate amounts of FDI inflows for 21 projects. Almost 11 percent of FDI is channeled to this sector (BNR 2017a). There are some foreign retailers in the country.
Resilience and stability	15		3	As the sector accounts for a considerable share of employment, it has significant impact on resilience; though the dominance of informal employment increases vulnerability in the population.
Environmental sustainability	10		3	The sector has limited environmental impact but could drive more sustainable practices in related sectors, especially through local linkages.
Average		–	3	

TABLE C.26 FEASIBILITY: RETAIL AND WHOLESALE TRADE

Criteria	Feasibility (1–5)		Explanation
	Current	Expected	
DEMAND			
	3	3	Demand for the sector is expected to grow in tandem with the economic growth of Rwanda, increasing urbanization and increasing incomes. Conversely however, the sector also responds to overall downturns in the economy.
PRODUCTION FACTORS			
Labor and skills	2	3	The sector has a considerable role in the informal economy and labor and skills are relatively easily available. Logistics remain a challenge for the sector (as for other sectors in the economy).
Existing capabilities	2	3	
Natural endowment and geography	2	2	
KEY INPUTS			
Energy	2	2	NPLs are high in the sector (Mwai 2017) which is likely to constrain credit availability in the sector. FDI inflows may rise and imports may fall as tariffs on second-hand clothing come into effect.
Transport	2	3	
Finance	2	2	
Intermediate inputs	2	2	

Table continues next page

TABLE C.26 (CONTINUED)

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
INSTITUTIONS			
Regulatory barriers	3	3	Local traders dominate the sector and are mainly informal. Barriers to entry are low and the sector is highly sensitive to changes in inflation.
Rule of law and property rights	3	3	
Market contestability	3	3	
Macroeconomic and political stability	3	3	
Average	2.41	2.67	

Construction and Construction Materials

Construction is by far the largest contributor to industrial GDP in Rwanda, at more than 51 percent (NISR 2016b). The construction sector accounted for majority of the industry growth, reporting 12.8 percent average annual growth in 2010–2015 (Business Sweden in Eastern Africa 2017), outpacing the average GDP growth rate in the same period. This growth is driven by rapid urbanization—from 2010 to 2015, Rwanda had the highest urbanization rate in the world and in Kigali alone the population is expected to rise to 3 million people by 2030, from 1 million in 2011 (Gardner 2017).

However, Rwanda is lagging on affordable housing, which is now a major priority for the government, as well as IFC (on the demand side through FIB as well as the supply side through MAS). With the urbanization rate in Rwanda expected to reach 35 percent by 2020, provision of affordable homes is a key element of the country’s development strategy. Initiatives to increase investments in the real estate development are critical to help bring more houses onto the market, particularly targeting the low-end market segment.

An EU study indicated that Kigali alone could face a housing deficit of 344,000 homes by 2020. At least 43,436 social houses and 186,163 affordable houses are required annually by 2022, reflecting 54 percent housing demand, per the city master plan. Thus, the sector exhibits high desirability in terms of growth, backward linkages, and inclusion.

High cost of construction materials and low supply are a major obstacle to meeting demand. Cement prices in Rwanda are higher than the continental average. CIMERWA is the only integrated cement producer in the country, catering to domestic demand and engaged in exports. It is the only cement company in Rwanda that mines raw materials, produces the clinker concentrate, packs and sells cement for general and civil construction. The government is actively seeing to attract more cement makers to the sector.

There are some new initiatives to construct environmentally friendly housing materials, such as straw or brick, which would be import-substituting and also have backward linkages to the agricultural sector. For these reasons, the team sees high value added in this sector to complement both ongoing IFC and World Bank work, with additional value added to play a role in connecting the different initiatives. Based on the CPSD deep dive and the GoR PSTA4 it is important that the World Bank (Agriculture and FCI GPs) and IFC search for opportunities of synergy, advisory and investment.

With the new master plan and housing code, the construction sector in Rwanda is set to continue its recent boom. International investors have taken notice—Business Sweden in Eastern Africa for example has cited construction in Rwanda as a key opportunity for foreign investors.

The World Bank is starting a Housing Finance Project that aims to address the supply constraints of mortgage financing as well as build up the institutions in Rwanda around long-term financing (for example, mortgage-backed securities). However, there are currently no programs that are looking at the construction materials side of affordable housing, or the construction services side. This offers opportunities for CPSD follow-up activities to complement ongoing work and broaden engagement in a high value-added sector.

Housing finance is a considerable challenge in Rwanda and one that is a focus of considerable government initiative. On the supply side, there is very little competition in the sector, dominated as it is by two large manufacturers who nevertheless are unable to meet domestic demand. Imports are the mainstay of the construction materials sector, which keeps prices high, compared to the rest of the region.

Challenges to ensuring that more units for low and middle-income earners are delivered onto the market include both supply side factors such as high cost of building supplies, cost of land, access to alternative construction materials, small firm size/ capacity, market fragmentation (Kigali versus rest of the country) as well as demand side issues (access to finance, affordable mortgage rates).

TABLE C.27 DEVELOPMENT IMPACT: CONSTRUCTION AND CONSTRUCTION MATERIALS

Criteria	Weights (%)	Desirability (1-5)	Explanation
Inclusion and jobs	25	5	The sector has experienced strong job growth which is expected to continue. It is the fifth largest employer in the country, with high indirect impact on jobs, and has a high share in consumption (World Bank 2017f).
Economic growth	15	5	Construction has the second highest output among all other sectors (superseded only by vegetables, fruits, and nuts) and has among the highest GDP multipliers. Growth in the sector is expected to increase if growth of sector (in response to demand for affordable housing) continues.
Competitiveness and productivity	25	5	Value added per worker is the highest in this sector (driven mostly by the dwelling sub-sector). It also has a strong impact on the input costs of other sectors.
Integration and connectivity	10	5	This sector receives the majority of FDI inflows in the country and creates among the highest jobs from.
Resilience and stability	15	4	This strong impact on the supply for affordable housing which is a key agenda item for the government and due to increasing urbanization in the already dense country, a crucial aspect of overall resilience and stability.
Environmental sustainability	10	3	The sector has significant direct impact on the environment which needs to be managed responsibly and sustainably. This requires additional investment in developing environmental guidelines and implementation mechanisms that balance demand for housing with sustainability.
Average	–	4.65	

TABLE C.28 FEASIBILITY: CONSTRUCTION AND CONSTRUCTION MATERIALS

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
DEMAND			
	4	5	There is high unmet demand for affordable housing which is likely to increase with growing rate of urbanization in the country. However, there is very little competition in the sector and it is dominated by two large companies, which constrains its growth. With additional investments and potential new entrants into the sector, this is expected to change.
PRODUCTION FACTORS			
Labor and skills	4	5	There is an existing and large pool of unskilled workers, a necessity for the construction sector. However, capital per worker is low in the sector raising concerns about underinvestment. This is expected to improve as government incentives to attract investment into the sector bear fruit.
Existing capabilities	3	4	
Natural endowment and geography	3	3	The sector is water-intensive and due to low level of technology, not particularly efficient in its usage of water resources.

Table continues next page

TABLE C.28 (CONTINUED)

Criteria	Feasibility (1-5)		Explanation
	Current	Expected	
KEY INPUTS			
Energy	3	4	Energy is essential to this industry and high cost of energy combined with its uneven provision raises overall costs. However, public investments and an energy reform program are expected to improve the situation. Most inputs have to be imported which raises costs in the sector. This dependency also necessitates a high level of physical connectivity which would help bring down costs of inputs.
Transport	4	5	
Finance	4	5	
Intermediate inputs	4	5	
INSTITUTIONS			
Regulatory barriers	5	5	Low level of regulatory barriers albeit with relatively high costs for contract enforcement. However, reforms are underway to improve enforcement and are expected to yield positive outcomes. Competition in the sector is also expected to increase as efforts to bring in more players yield results. Stable macroeconomic situation expected to continue.
Rule of law and property rights	4	4	
Market contestability	2	4	
Macroeconomic and political stability	5	5	
Average	3.8	4.5	

Agribusiness

Agriculture is the largest employer in the country. It provides employment to 70 percent of the labor force and contributes one-third of the GDP. According to the Rwanda Development Board, the sector also generates more than 50 percent of the export revenue. The largest exports are coffee and black tea. Sectors that offer additional opportunities include Irish potato, cassava, horticulture, banana, and dried beans.

Given the importance of agribusiness in the Rwandan economy and its dominance in the labor force, there is a strong foundation to build upon and significant opportunities for further growth and value-addition. While some of these have been studied prior (coffee, tea), others (horticulture, bananas, potatoes) have only recently received attention. Agribusiness has a deep dive sector has also received strong support from colleagues across the World Bank Group and is an IFC strategic priority.

The government has set ambitious targets for the sector, aiming to increase exports from 19.2 percent to 28 percent annually. Public investments in the agriculture sector were higher than 10 percent between 2008 and 2016.

While Rwanda's growth in agribusiness has focused largely on commodities like maize and wheat to date, some of the other higher value-added sectors are starting to show potential. Major constraints include access to quality raw material, inadequate farming techniques, skills shortages, a weak domestic market, small farm size, low quality inputs, and access to markets. Many of these constraints have potential to be addressed within the short-term.

Moreover, crop yields are still recovering from the 2016 drought, with increase in production volumes of tubers, roots, and fruits but decrease in those of cereals, pulses, and bananas (World Bank 2017d). Postharvest losses are high as storage and warehousing facilities are inadequate. Skills shortages, especially in the categories of agronomists, logistics and quality managers are challenging to fill (RDB 2012).

TABLE C.28 DEVELOPMENT IMPACT: AGRIBUSINESS

Criteria	Weights (%)	Desirability (1-5)	Explanation
Inclusion and jobs	25	4	The sector already employs a majority of the labor force and has a large direct impact on jobs; it also has the highest employment multiplier effect. However, at present, value added per worker is on the low side, reflecting the underdevelopment of the sector (World Bank 2017f). With its diversification into high value-added activities, there is a significant opportunity to enhance indirect employment and value-added impact.
Economic growth	15	5	The sector has a high positive contribution to GDP through indirect and direct effects, and in fact outperforms all other sectors, with an average GDP multiplier higher than 2 for agriculture and forestry and average GDP multiplier 1.8 for food and beverages.
Competitiveness and productivity	25	5	Presently, low value added in the sector is a challenge, where agriculture and forestry have the lowest VA per worker among all other sectors. Forward linkages are also weak with 5 percent price increase in the sector, would increase input costs for other sectors by \$2 million. This highlights a dearth of value-added activities which may be achieved by increased investment.
Integration and connectivity	10	5	The sector is a major contributor to exports, albeit mostly primary exports i.e. coffee and tea. Moreover, increased value addition would require greater connectivity e.g. for transportation of raw materials to market and greater regional integration for exports of processed agricultural products.
Resilience and stability	15	4	The sector is high in natural resource dependency as exports tend to be low value-added. This offers a significant opportunity. It would also lead to less export product and market concentration.
Environmental sustainability	10	2	The development of agribusiness can negatively affect the environment (deforestation and overuse of water resources), which needs to be carefully monitored/mitigated.
Average	–	4.3	

TABLE C.29 FEASIBILITY: AGRIBUSINESS

Criteria	Feasibility (1–5)		Explanation
	Current	Expected	
DEMAND			
	3	4	Demand expected to rise as a result of economic growth and increase in urbanization. In addition, exports in the export are also on the uptick.
PRODUCTION FACTORS			
Labor and skills	3	4	The sector is the largest employer in the country and will continue to remain significant. However, skill gaps remain—with technically proficient roles like agronomists relatively harder to fill. Rwanda is a land scarce country and growing urbanization is further encroaching on arable land, which may affect output in the absence of increased use of yield-enhancing technologies.
Existing capabilities	3	4	
Natural endowment and geography	3	3	
KEY INPUTS			
Energy	3	4	Energy and transport are growing with increased public investment in the sectors and an energy sector reform program. The financial sector growth has slowed down as credit has shrunk. Similarly, access to high quality agricultural inputs is challenging, although expected to improve under the new inputs distribution model.
Transport	3	4	
Finance	3	4	
Intermediate inputs	3	4	
INSTITUTIONS			
Regulatory barriers	4	4	The market is somewhat concentrated, with investments in the sector allocated to a small number of companies. Land rights are fairly clearly delineated with the Land Tenure Reform Program of 2004 resulting the registration of nearly all land. Settlement of disputed land claims continue and will help in greater use of land as collateral and therefore investments in agriculture. Stable macroeconomic situation expected to continue.
Rule of law and property rights	4	4	
Market contestability	3	4	
Macroeconomic and political stability	4	4	
Average	3.3	4	

TABLE D.1 SUMMARY OF POTENTIAL FOR DEVELOPMENT IMPACT BENCHMARKING FOR RWANDA

	Inclusion and jobs	Economic growth	Competitiveness and productivity	Integration and connectivity	Resilience and stability	Environmental sustainability
Finance and insurance	3	4	3	3	3	3
Mining	3	4	3	3	2	1
Energy	3	5	5	5	4	4
Water and sanitation	3	3	2	3	4	4
Transport	3	4	4	4	3	3
ICT infrastructure	2	4	4	3	2	3
ICT services	3	2	2	2	3	3
Agribusiness	4	5	5	5	4	2
Light manufacturing	3	3	3	3	3	2
Other manufacturing	2	3	3	3	2	2
Wholesale and retail trade	3	3	3	3	3	3
Construction and real estate	5	5	5	5	4	3
Tourism	4	4	3	3	3	4
Education	4	4	3	2	3	3
Health	4	4	4	2	3	3

Source: Rwanda CPSD team.

TABLE D.2 SUMMARY OF CONSTRAINTS BENCHMARKING FOR RWANDA, CURRENT CONDITIONS

	Demand	Production factors			Key inputs				Institutions			
	Domestic and/or global market potential	Labor and skills	Geography and natural resource endowments	Existing capabilities	Energy	Transport	Finance	Intermediate inputs	Regulatory barriers	Rule of law and property rights	Market contestability	Macro and political stability
Finance and insurance	3	3	3	3	3	3	3	3	3	3	3	3
Mining	2	3	3	3	3	3	3	3	3	4	4	4
Energy	3	2	2	2	2	2	3	2	3	3	2	2
Water and sanitation	3	2	4	3	2	2	2	3	3	2	2	3
Transport	3	3	2	2	2	2	3	2	3	3	3	2
ICT infrastructure	3	3	2	2	2	2	3	2	1	3	1	3
ICT services	2	2	2	2	2	2	2	2	2	3	2	2
Agribusiness	3	3	3	3	3	3	3	3	4	4	3	4
Light manufacturing	3	3	2	2	3	3	3	3	3	3	3	3
Other manufacturing	2	2	2	2	2	2	2	3	3	3	2	3
Wholesale and retail trade	3	2	2	2	2	2	2	2	3	3	3	3
Construction and real estate	4	4	3	3	3	4	4	4	5	4	2	5
Tourism	3	3	4	3	3	3	3	3	4	4	3	4
Education	2	2	3	2	3	2	2	3	4	3	1	4
Health	2	2	2	2	2	3	3	3	4	2	2	3

Source: Rwanda CPSD team.

TABLE D.3 SUMMARY OF CONSTRAINTS BENCHMARKING FOR RWANDA, CONDITIONS AFTER 5 YEARS OF REFORM

	Demand	Production factors			Key inputs				Institutions			
	Domestic and/or global market potential	Labor and skills	Geography and natural resource endowments	Existing capabilities	Energy	Transport	Finance	Intermediate inputs	Regulatory barriers	Rule of law and property rights	Market contestability	Macro and political stability
Finance and insurance	3	3	3	3	3	4	3	3	3	3	3	3
Mining	2	3	3	3	3	3	4	3	4	4	4	4
Energy	4	2	2	2	2	2	3	2	3	3	2	2
Water and sanitation	4	3	4	4	2	2	3	3	3	2	3	3
Transport	3	3	2	2	2	2	4	3	3	3	3	2
ICT infrastructure	4	3	2	2	3	2	3	2	1	3	1	3
ICT services	3	2	2	2	2	2	3	2	3	3	3	2
Agribusiness	4	4	3	4	4	4	4	4	4	4	4	4
Light manufacturing	3	3	2	2	4	4	3	3	3	3	3	3
Other manufacturing	3	2	3	2	2	2	3	3	3	3	3	3
Wholesale and retail trade	3	3	2	3	2	3	2	2	3	3	3	3
Construction and real estate	5	5	3	4	4	5	5	5	5	4	4	5
Tourism	4	3	4	3	4	3	3	3	4	4	4	4
Education	2	2	3	2	3	2	2	3	4	3	1	4
Health	3	2	2	2	2	3	3	3	4	2	3	3

Source: Rwanda CPSD team.

METHODOLOGY FOR AFFORDABLE HOUSING COST BENCHMARKING

CAHF's 2015 study *Benchmarking Housing Costs in Fifteen Countries in Africa* develops and implements a consistent methodology for specifying, detailing, and costing a standardized house on a uniform basis in two cities across fifteen African countries. The pilot housing cost benchmarking study defines a “standard house” that is acceptable to and can be compared across divergent cultures, geographies, and climates, breaks this down into its component parts, ensures that costing is consistent and comparable across English, French, and Portuguese-speaking countries and different quantity surveying and costing conventions.

A basic, generic house was designed that is viewed as acceptable across Africa. This 46 meters squared house with a 9 meters squared balcony, built on a 120 meters squared stand was broken down into a detailed yet standard Bill of Quantities (BoQ), covering nearly 400 cost items: land, services, construction materials, labor, profit and financing costs. This BoQ was sent to qualified quantity surveyors identified in each country and was costed based on prevailing in-country costs for a notional 20-unit development in the capital city and a secondary city. This costing information has been collated, checked, consolidated, and analyzed.

CAHF has an extensive database of the elemental costs of a standardized house in thirty cities across fifteen countries. We can compare the total cost of building to completion this standard house across countries and cities; break this cost down into broad categories (land, infrastructure, construction, other costs) or sub-categories (foundations, walls, roof, finishes); or separate costs into component costs (labor vs materials, cost of cement, or timber, or steel). Finally, we have categorized the input costs according to their Standard Industry Classifications, so that we know what economic sectors are stimulated, and to what extent, by the construction of this generic house. Most importantly, we can compare these things—categories, components, inputs, products, sectors—across cities and countries and economic sectors.

This study shows that the dollarized cost of building this generic house varies by over 100 percent among the included African cities, and even varies between cities in the same country. More importantly, the analysis is able to demonstrate where these cost differences are in the cost composition of the house. Major differences are indicated in between countries and cities in almost all elements, including land, services, construction materials and labor costs.

INTERMEDIATE INPUT COSTS FOR AFFORDABLE HOUSING COST BENCHMARKING

TABLE F.1 COMPARISON OF INTERMEDIATE INPUT COSTS FROM THE PRIMARY ECONOMIC SECTOR

	Johannesburg		Kigali	
	Cost	Quantity	Cost	Quantity
Building sand	86	3	66	3
Concrete sand	95	3	72	3
19mm stone	178	4	86	4
Washed plaster sand	245	7	173	7
Total	604	17	397	17

Source: CAHF 2018.

TABLE F.2 COMPARISON OF INTERMEDIATE INPUT COSTS FROM THE SECONDARY ECONOMIC SECTOR

	Unit	Johannesburg		Kigali	
		Cost	Quantity	Cost	Quantity
Cement	50kg sack	178	28	309	28
Cement blocks, bricks	item	393	510	596	510
Allowance for masonry sundries	item	68	1	1013	1
Mild steel and high tensile strength bar reinforcement in foundations	ton	238	0	344	0
Pressed steel rebated frame for door size 813mm x 2032mm	no.	115	5	234	5
Steel windows and fittings, size 500mm x 600mm	no.	30	1	55	1
All roof construction materials - timber	m2	150	55	236	55
Roof construction materials sundries	item	14	1	23	1
Creosote/carbolineum-based timber preservative	liter	2	1	4	1
Floor tiles and sundries	m2	420	55	1143	55
External doors - timber	no.	231	2	260	2
Internal doors - timber	no.	124	3	312	3
Timber skirtings and fixings	m2	70	42	124	42
Supply window glass	item	224	9	122	9
Kitchen units	item	169	1	649	1
All materials for electrical installation	item	719	1	984	1
Light fittings, including globes	item	83	7	91	7
Materials for plumbing and drainage (includes sanitary fittings, taps, and so on)	item	884	1	584	1
Flush toilet	no.	73	1	195	1
Wash hand basin (includes fixing brackets, waste outlet, plug and chain, S-trap, connector hoses, and taps)	no.	65	1	104	1
Allowance for paint and timber preservatives (for walls, ceilings, doors, windows, skirtings, and so on)	m2	525	55	649	55
Total		4774	780	8009	780

Source: CAHF (2018).

TABLE C.1 SOES IN SECTORS

	Firms with major government shareholding	Firms with minority government shareholding or joint venture	Crystal ventures
<i>Enabling sectors—critical to stimulate employment and growth in all other sectors of the economy</i>			
FINANCE AND INSURANCE			
Banking/lending	●	●	
Insurance, reinsurance	●		
COMMUNICATIONS			
Mobile telecom		●	●
Internet access/data transmission		●	●
Infrastructure deployment/maintenance			●
Media and broadcasting; publishing	●		
Postal services	●		
ENERGY			
Electricity generation	●	⊙	
Transmission	●		
Distribution and supply	●		
TRANSPORT			
Air Transport	●		
Air Transport ancillary services			●
Operation of air transportation infrastructure	●		
Operation of road infrastructure	●		
Passenger transportation	●		
Logistics and warehousing	⊙		●

Table continues next page

TABLE G.1 (CONTINUED)

	Firms with major government shareholding	Firms with minority government shareholding or joint venture	Crystal ventures
<i>Trade sectors—sectors in which Rwanda could be well positioned to be competitive in international markets</i>			
AGRIBUSINESS			
Agricultural inputs		⊙	
TOURISM			
Accommodation and restaurants; Hospitality	●	●	
MANUFACTURING			
Construction material	⊙	●	●
Food products and beverages			●
Manufacture of basic metals	●	●	
<i>Domestic/Nontraded services</i>			
CONSTRUCTION AND REAL ESTATE			
Processing zones	●		
Housing	⊙	●	●
Construction and engineering	⊙		●
Property Management, office renting	●	●	
WHOLESALE AND RETAIL TRADE			
Wholesale	●		
Retail trade			
<i>Social sectors directly impacting the endowment of human capital</i>			
Education	●		
Health	●		
Water and sanitation	●		

Source: OECD-World Bank Group PMR questionnaire, Horizon and Crystal Venture webpages, and news. Prepared by Markets and Competition Policy Team, MTI.

Note: ⊙ = Horizon Group, associated with Defense Force.

Notes

1. SOEs are enterprises that are fully or partially owned by the Government of Rwanda in order to undertake economic activities, including public-private investment groups in which government has invested along with private investors. Rwanda has recently implemented reform efforts, where the Rwanda Defense Forces' holdings were transferred to MINECOFIN.
2. Many of the SOEs identified in the pay-as-you-earn administrative data are public entities such as hospitals and schools. The data do not identify all firms where government has partial ownership.
3. Tariffs for large industries were reduced by 3.6 per cent, from FRW 83 (\$0.096) per kWh to FRW 80 (\$0.092) per kWh. The tariffs for medium industries dropped to FRW 87 (\$0.101) from FRW 90 (\$0.104) per kWh. The tariffs for small industries fell from FRW 126 (\$0.146) to FRW 110 (\$0.127).
4. The report used the most up to date data available when undertaking the empirical analysis.
5. The least mentioned reason is lack of skilled workers (10.5 percent). Other reasons included unreliable supply of power (24 percent), lack of necessary specialized technology, machinery or spare parts (22 percent), bottlenecks on the production line (13.4 percent), labor market regulations (14.2 percent), and old equipment (17.3 percent).
6. BCC and RDB: Accelerating private sector led economic development in Rwanda.
7. Rwanda's external account deteriorated in 2013–16 but has since improved. This was a result of externally financed government investments and weak commodity prices.
8. More than half of companies cited access to national markets as a key reason to invest in Africa in a recent survey of potential investors undertaken by the World Bank.
9. This includes credit to the entire enterprise sector, including private firms and SOEs.
10. 1PL refers to a first party logistic model, where the manufacturer or the industrial actor does not outsource transport and logistic activities to third parties. 2PL refers to a second party logistic model (2PL), where the manufacturer hires a carrier or warehouse manager as a subcontractor for the operational execution of a clearly defined transport or logistic task, and the organization and follow-up remain the responsibility of the manufacturer.
11. Of Rwanda's total connections 2G accounts for 77.98 percent, 3G connections accounts for 15.81 percent, while 4G connections are low at 6.21 percent of the total connections.
12. Refer Law_No_62_2018_of_25_08_2018 Governing Public Procurement.
13. In particular: diversified tourism, high-value information technology and technical services industry, business and finance services, logistics and aviation (airline, airport, drones, ports), agriprocessing (advanced food industry, technology-intensive agriculture with a commercial focus), scientific and technological innovations (nanotechnology and biotechnology), construction industry (housing, local materials development and expansion), extractive industry (mining, oil and gas) with a focus on value addition.
14. This includes agriprocessing, light manufacturing, construction materials, horticulture, knowledge-based services, tourism, logistics, and transport.
15. The government has also created a National Industrial Policy, a Domestic Market Recapturing Strategy, and a National Export Strategy, among other programs, to drive industrial development in accordance with the country's long-term economic development goals.
16. The sector scan is based on IFC's sectoral classification, adapted to the context of Rwanda (see appendix B).
17. See methodology note (World Bank 2017g).
18. The quantitative input for scoring the development impact categories included data on output, growth, jobs, value added per worker, exports, investment flows, consumption, among others. The quantitative input for scoring the feasibility categories were measured with a benchmarking exercise to help assess the severity of cross-cutting constraints on each of Rwanda's productive sectors. This analysis is based on the historical performance of more than 7,000 IFC projects across the world and the Trade and Competitiveness 360 database on cross-cutting constraints.
19. The cross-cutting constraints for SMEs are probably more numerous and binding than illustrated by the benchmarking as by nature IFC-supported investments are larger in size.
20. "The Principles for Responsible Agricultural Investment (PRAI)," *United Nations Conference on Trade and Development*. <http://unctad.org/en/Pages/DIAE/G-20/PRAI.aspx>.
21. The team selected these five subsectors through discussion with IFC and World Bank sector colleagues, including: tea, coffee, cassava, horticulture, and sugar. These products were selected based on a mix of prospective competitiveness, investment opportunity, import substitution, and export/global market access. Irish potatoes, dried beans, and bananas were also considered. The selection is not meant to be comprehensive, and other subsectors may also present opportunity for Rwandan agribusiness, such as livestock.
22. The World Bank has recently been engaged through investment programs, including a Program for Results to support implementation of the fourth Strategy Plan for Agriculture Transformation (see appendix A). These programs start from the premise that the government will be a market enabler and proactively encourage and support the role of the private sector in development through investment.
23. The packaging ban is also a cross-cutting constraint for competitiveness in the domestic market that competes with imported inputs. This is important in the context of "Made in Rwanda," which identifies sectors based on potential for import substitution.
24. Rwanda is included in the Enabling the Business of Agriculture project, which at the time of this study was undertaking data collection and benchmarking policies across multiple thematic areas. The data was not yet available for inclusion in the report.
25. A coffee bean is a seed of the coffee plant and the source for coffee. It is the pit inside the red or purple fruit often referred to as a cherry.
26. Generally, there is more value in processed goods.

27. Sugar was selected as a deep-dive subsector at the request of IFC.
28. The opportunity costs of investment were not considered in the deep dive analysis.
29. Informal Settlements/Inadequate housing includes: Unplanned clustered rural housing, Isolated rural housing, Agglomeration and Unplanned urban housing.
30. The direct contribution includes the initial impact of economic value-added directly during the construction and rental of houses combined with the first-round impact generated from the intermediate inputs required to construct or rent accommodation. It does not consider the more difficult to calculate indirect impact (arising from purchases from upstream suppliers in those suppliers' specific value chains), or the induced impact (arising from housing in the economy).
31. While the purpose of the exercise is to benchmark housing costs based on a standardized typology, design and specification, the study recognizes that internal costing methodologies based on a different density, volume, local material and incentives packages could come up with different outcomes. In addition, the "standard house" used in the cost benchmarking exercise is not intended to be representative of a typical dwelling in the affordable segment of the market in Rwanda. Instead, it is based on uniformity across regional markets to ensure cost comparison.
32. For the purpose of this study, costs assumed for land and services in Rwanda were exclusive of government subsidy contributions.
33. Products include cement, ceramics (glazed and unglazed), wood and wood products, paints, and bitumen.
34. The Prime Minister's Instructions (PMI) encourage high-density development as the name of the legislation shows (Determining the Conditions and Procedures for Obtaining Government Support for Affordable and High-Density Housing Projects), though the main incentive is the provision of serviced land. It is understood that the PMI does not provide more sophisticated incentives such as density bonus and fee waivers, nor mention the required percent of affordable housing.
35. The property tax is applied for second owned houses so affordable housing owners are automatically waived. It is understood that the property tax has changed so that instead of exempting an 'affordable' threshold, the first home is totally exempt, but all others taxed without a zero band. The implications could be that low income citizens absorb the costs (tax) through rents paid, while those in higher income brackets could be exempt.
36. Additional analysis is needed on the use of subsidies and other incentives in the sector. It is recommended to review in full the incentive framework for affordable housing, including fiscal incentives to promote the supply of affordable housing development. From there, specific recommendations can be made.
37. Higher-density refers to multi-story construction (such as double story development); higher-density semi-detached or row housing; medium-density four or five story "walk-up" apartments; high-rise apartments (5+ stories); and "backyard tenements, rooms and cottages," aimed to serve smaller households of one to three people.
38. In terms of financing these initiatives, infrastructure bonds have recently been issued by the GoR and PPPs offer another way to channel private sector investment into infrastructure development. In 2018, the GoR signed a \$20 million agreement with the Organization of Petroleum Exporting Countries' Fund for International Development for the provision of clean water and sanitation (Tumwebaze 2018). Power access rate is at 41 percent, with wide urban-rural divide; the rate is a mere 9 percent in rural areas and 72 percent in urban areas (USAID 2018). The target is to achieve universal access by 2024 (with 52 percent on-grid and 48 percent off-grid access). A major challenge

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