

Rwanda Infrastructure Sector Overview

1.1 Economic Opportunity and infrastructure

Infrastructure deficits are constraining Rwanda's growth in key sectors including agriculture, which currently accounts for 31% of GDP. The Government of Rwanda (GoR) aims to boost employment via addition of high-value agricultural processing (coffee washing, roasting, and packaging). However, moving from subsistence crops to export-oriented / commercial farming requires investment in the expansion of irrigation infrastructure. Tourism, services and logistics (46.38% of GDP) are a growth area and the Government is investing in a new international airport (Bugesera), 'Kigali Innovation City', tourist facilities, ring roads around Kigali, wastewater treatment and potable water facilities and railways to Uganda and Tanzania to facilitate growth.

The following opportunities are key to promoting inclusive growth in Rwanda:

- **Growth and job creation:** Rwanda's long term development goals are embedded in the Vision 2020. The objective is to transform the economy into a knowledge-based, service-oriented economy with middle-income status by 2020. The plan is centred around six pillars with three cross-cutting issues. The focus on infrastructure development, the private sector as well as human resource development are important growth drivers for the construction industry.
- **Inclusion and poverty reduction:** Access to affordable and appropriate transport is of critical importance in widening employment opportunities for the urban poor, yet transport strategies rarely consider effects on them. Current model village plans are relocating vulnerable communities to peri-urban areas. It is important to consider mobility concerns in the resettlement of urban poor, such as cheap access to a centre of economic and commercial activity, not just to the formal but also to informal industry and jobs.
- **Investment in infrastructure:** Rwanda aims to transform into a middle income country by 2020, however the country's infrastructure gap is estimated at 2.11% of GDP. Rwanda has now joined Africa50, a Pan African infrastructure platform that was created to bridge the infrastructure gap by developing and investing in bankable projects, catalysing public sector capital and mobilising private sector funding.
- **Climate and environmental resilience:** 60% of Rwanda's energy requirements are met via hydro-electric power plants. As water becomes increasingly scarce, increased intervention is required to improve the management of the watersheds supporting the power stations. Rwanda's largest climate resilience investment was made in 2018, a \$32.8m initiative funded by the Green Climate Fund to protect the River Muvumba watershed and establish adaptation and mitigation approaches in the agricultural sector.

1.2 Stakeholder Analysis

This section sets out in short bullet points the relative engagement of key players in infrastructure.

Public sector	<ul style="list-style-type: none"> • Objective of energy policy to set up and promote an enabling environment for increased private sector participation in energy supply and service provision. • The government plans to optimise the financing of energy sector investments by striking a balance between the use of domestic fiscal resources and external financing. • Made in Rwanda and infrastructure were given priority in 2017-18 budget. Increased funding being used for roads, irrigation projects, key transmission lines, improvement of water supply in both rural and urban areas among other priorities. • The Made in Rwanda Policy prescribes the objectives and strategies for the industrial sector outlined in the vision 2020, National Strategy for Transformation and long term vision 2050. It is a holistic roadmap aimed at increasing economic competitiveness by enhancing Rwanda's domestic market through value chain development.
Private sector	<ul style="list-style-type: none"> • Kigali Water is one of the first water projects to be developed using a public-private partnership (PPP) model in sub-Saharan Africa. It is expected to produce 40 megalitres of water per day, equivalent to one-third of Kigali's total supply, when complete in 2020. • Total investment committed to PPPs since 1990 is \$694m (most in the energy sector). • In 2015, the Rwandan government passed its first law establishing guidelines for future contracts between the government and private investors.
Donors	<ul style="list-style-type: none"> • The World Bank portfolio is comprised of 10 national projects with net commitment of \$844.35m and six regional projects with a commitment of \$204m. WB projects include the Rwanda Electricity Access Scale-up (\$130m); Priority Skills for Growth (\$120m) and Rwanda Urban Development Project (\$95m). • The GoR aims to shift from a donor and public investment-led growth model towards one where the private sector is more active. This will in part require further strengthening and deepening of Rwanda's capital markets, and also a continuing effort to persuade donors to provide concessional financing. • 30-40% of the national budget still comes from aid thus infrastructure investment is

1. Sectoral analysis

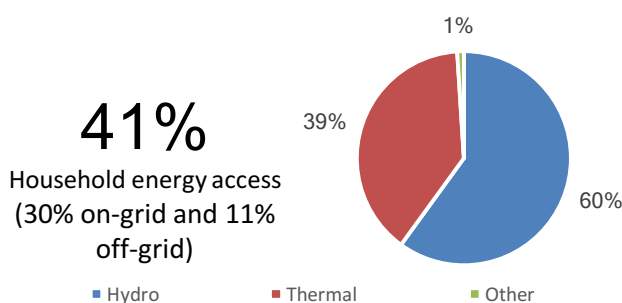
2.1 Energy

Overview

The GoR is aiming to generate 355MW of electricity by 2020, enabling all Rwandans to be supplied with electricity. Rwanda offers opportunities for independent power producers to invest in clean and renewable energy generation, methane, mini hydro, peat, and off-grid projects. The GoR's Energy Sector Strategic Plan (ESSP) 2013-18 has increased electricity access and generation capacity. As more generation projects come online, there are increasing opportunities for investment in transmission and distribution projects. The country is positioned well to serve as a hub to transmit power from Ethiopia, Kenya, and Uganda to neighbouring Burundi and eastern DRC.

While national electricity access has increased from 18.6% in 2012 to 41% in 2017 (30% on-grid and 11% off-grid), it remains considerably below the 70% target for 2017/18. Although tariffs were high they have recently been reduced to closer to the regional average of \$0.15/kWh. The Rwanda Energy Group Limited is a government-owned holding company responsible for the import, export, procurement, generation, transmission, distribution and sale of electricity in Rwanda. Its target is to achieve universal access by 2024 with 52% on-grid and 48% off-grid. In terms of the energy mix there is also a need to stimulate and support mechanisms to invest in strategic reserves and to increase distribution of LPG.

Energy Access for households and business



Energy currently makes up 4.72% of average household consumption spend and there is a high dependence on hydro-electric power.

Major investments planned

- The GoR signed a financing agreement with the World Bank to help increase electricity access through off-grid technologies and to facilitate private-sector participation in renewable off-grid electrification.

2.2 Transport

Overview

Rwanda lacks a link to regional railway networks so all trade is conducted via road or air. Non-tariff barriers add to high transportation costs leading to inflated prices of domestically manufactured products, as most raw materials used for manufacturing need to be imported. As a result, transportation costs for imports and exports are among the highest in the world at 40% of value of imports or exports (12% in Kenya and 36% in Uganda). Transport cost between Mombasa, Uganda and Rwanda would reduce to 25% if rail was used rather than road.

Transport is a key area of opportunity for Rwanda as a 'land-linked' country. Owing to its small size, Rwandan cities are well connected with each other. Regional transport connectivity is improving with strategic investments being made in both Tanzania and Kenya to promote regional trade links.

Top 5 Exports	% GDP	Top Destination
Gold	2.12	UAE - 100%
Tea	1.38	Kenya - 64%
Refined Petroleum	1.29	DRC - 65%
Niobium, Tantalum, Vanadium and Zirconium Ore	1.1	China - 27%
Tin Ores	0.76	Thailand - 34%

Trade corridors

- Rwanda, as a member of the East African Community, has access to a regional market of over 162m consumers. Rwanda also stands to benefit if access can be improved to the sizable market in eastern Democratic Republic of the Congo (DRC).
- Rwanda has established the Kigali Special Economic Zone, the Kicukiro SME Park and is planning several other industrial parks. Bonded warehouse facilities are now available both in and outside of Kigali for use by businesses importing duty-free materials.
- Ease of doing business: 41/190

Ports / Cross border trade

Most imports and exports are shipped by road from the ports of Mombasa (Kenya) and Dar es Salaam (Tanzania), a distance of up to 1,500km. Commercial traffic to and from the ports is subject to frequent delays, numerous weigh points, high transportation costs and occasional theft. These hindrances can cause unpredictable delays when importing goods into the country. As such, shipping insurance and freight forwarding services can prove difficult to acquire in Rwanda. Average time to clear customs: 10.2 days.

Major Investments

The new flagship Bugesera international airport, located 40km south of Kigali, is currently Rwanda's largest single infrastructure project, expected to be operational in 2020. Structured as a PPP, the main contractor Mota-Engil (Portugal) has a 25-year concession (with the option on a 15 year extension) to fund, build and operate the new airport. Total cost of the two phases is currently estimated at \$828m.

Dubai Ports World (DPW) - a logistics and freight handling facility in Kigali is located 3km from the Special Economic Zone and close to the proposed railhead for the Dar Es Salaam - Kigali Railway. The GoR entered into a 25-year concession in 2016 with DPW to finance, manage and operate the facility. This was completed in Aug 2018 and is now operational. DPW has major plans for developing the facility as a major freight handling hub for Rwanda and the region. The DPW Facility will handle freight coming from both Mombasa and Dar Es Salaam ports.

For the Dar Es Salaam to Kigali railway, there is agreement in principle for a route with a branch from Isaka (in Tanzania) to Kigali. The total estimated cost is \$2.5bn with a cost share of \$1.2bn Rwanda and \$1.3bn Tanzania. Possible start in late 2018 however funding is not yet in place. Work has started on the standard gauge railway from Nairobi to Kampala (constructed by China), with plans to upgrade the road from Kampala to Kagitumba on the Uganda/Rwanda border.

2.3 Digital Connectivity

Overview

Rwanda continues to be one of the fastest growing African countries in ICT and there are several avenues for growth for the ICT sector, from e-commerce and e-services, mobile technologies, applications development and automation to becoming a regional center for the training of ICT professionals and research. The government has installed over 5,000 km of fibre optic cable throughout Rwanda, with regional links to neighbouring countries. Rwanda is also one of the few countries in Africa to have launched a high-speed 4G LTE wireless broadband network in Kigali, though uptake is slow due to high prices. Rwanda has made major investments in digital technologies however adequate numbers of skilled IT professionals are also still lacking.

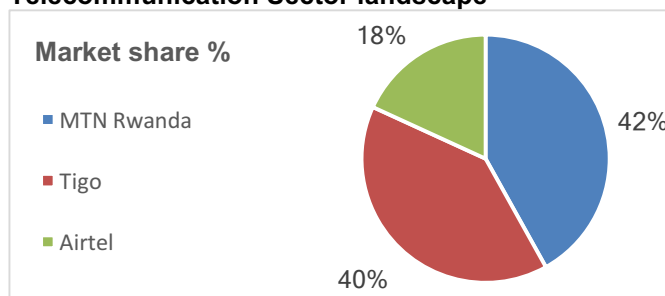
Digital service accessibility

Local content	Apps in local language # apps in local language	155/170 19.13
e-gov services	Digital rank e-gov score	99/170 45.65 GSMA

Digital Access

Network coverage	2G (GPRS) 3G+ 4G	99.56% 99.37% 89.00%
Access	household internet access Individuals using internet Internet speed Mobile subscription	9.3% 20% 35.35 bps 72.24%
Mobile price	Entry data usage	133/170
Adult literacy	Male Female	72.45% 61.55%

Telecommunication Sector landscape



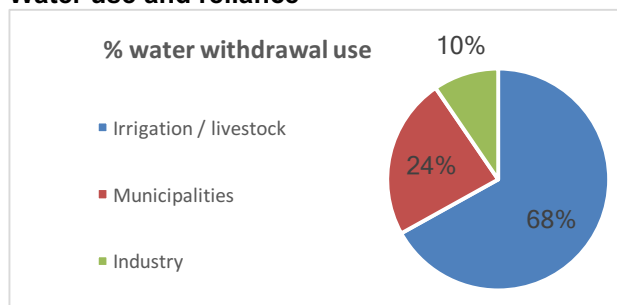
2.4 Water & Sanitation

Overview

Major infrastructure investments in water supply and sanitation services are mainly limited to Kigali. The Government and the Water and Sanitation Corporation (WASAC) agreed a PPP contract with Dubai-based Metito Holdings for a 40 Megalitres/day bulk water supply to the city. The total cost is \$62m. EIB and AfDB are co-financing Kigali's wastewater treatment facility that will provide a sewerage system and wastewater treatment works for the Central Business District.

The GoR has established the Department of the Rural Water Supply and Sanitation Services (RWSS) in WASAC in 2014 to ensure the sustainable framework for rural water supply services and has strengthened the support system for the rural water supply project by the districts.

Water use and reliance



Agricultural water use

- Tea and coffee are the major exports while plantains, cassava, potatoes, sweet potatoes, maize and beans are the most productive crops. Rwanda exports dry beans, potatoes, maize, rice, cassava flour, maize flour, poultry and live animals within Eastern Africa.
- >80% pop deriving livelihoods from agriculture
- 69% population rural and 22.1% rural poor
- 52% agricultural land / under cultivation

Water resource availability

Proportion of total actual renewable freshwater resources withdrawn: MDG Water Indicator (Aquastat)	1.13%
---	-------

Transboundary dependencies

Rwanda participates in initiatives aimed at the regional development of the international water courses that cross it, such as the Nile Basin Initiative (NBI). On the Ruzizi River, two dams have already been built to provide energy to Rwanda, Burundi and the Democratic Republic of Congo in the form of flood control. The development of a third Ruzizi III dam, which is of interest to the Economic Community of the Great Lakes Countries (ECGLC), is under consideration.

2.5 Urban Infrastructure**Overview**

Rwanda is one of the least urbanised countries in Africa. However, the urbanisation rate is high, contributing to pressure on housing and land construction.

The National Housing Policy (2015) seeks to provide everyone, irrespective of income, access to adequate housing in sustainably planned and developed areas 'reserved for habitation'. The District Land Use and Development Plans (2014/15) and Kigali City Master Plan (2013) however restrict the type of housing which may be developed, in some cases advocating the relocation of residents, and the destruction of existing (inadequate but affordable) housing stock. A central part of the plan was to remove informal housing and those living there and replace with units that met the vision for the city. The National Informal Urban Settlement Upgrading Strategy was approved in 2017. Informal housing makes up 79% of the housing stock in Kigali.

Urban Structure

% urbanised	22.1
# urban residents	2.63m
% living in informal settlements	62.6% of all urban households and 79% of all residents of Kigali
Urban poverty (%)	22.1
Urban employment (%)	
- Total	84% [national]
- Youth	96.7%
- Female	85.2% [national]

City size	# Cities	% Nat pop.	Tot pop.
Over 1m	0	0	0
500k-1m	2	14.4%	1,718,664
100-500k	2	2.3%	273,660
50-100k	4	1.84%	219,106
20-50k	28	4.9	584,407

Urban infrastructure overview

Energy	% household access Power outages (per month)	80% 4
Water	% access to improved water # connected to mains % household spend water utility Cost of most recent flood event	89% 90% 0.19% \$28m
Sewerage	# with sewerage connection	15%
Urban transit	% household spend transport Commute time in large cities Air pollution deaths in cities	8.99% Gov target: 60 mins 300

3.0 Ongoing x-HMG Engagement

Dpt / Org	Initiative	£ value
BEIS	Pilot Programme for Climate Resilience	225m
	UK Climate Investments LLP	200m
	Renewable Energy Performance Platform	48m
DFID	Weather and Climate Information and Services for Africa (WISER)	35m
	Support to Trademark East Africa Rwanda (TMEA) Rwanda Country Programme - Strategy II	32m
	Africa Clean Energy Programme (ACE)	28.32m
	Scaling up of the Energy and Environment Partnership with Southern and East Africa	25.96m
	Provision of finance to the Rwanda Fund for Climate Change and Environment	22.56m
	Renewable Energy and Adaptation Climate Technologies (Africa Enterprise Challenge Fund)	16.7m
	Research on Growth and Urbanisation in Low Income Countries	5.85m
World Bank	Rwanda Electricity Sector Strengthening Project	95m
	Transformation of Agriculture Sector Program Phase 3 PforR	100m
	Third Rural Sector Support Project	80m

