

## DRC Infrastructure Sector Overview

### 1.1 Economic Opportunity and infrastructure

The DRC is one of the most infrastructure challenged countries in the world. Ground transportation has always been difficult and the country's vast geography, low population density, extensive forests and criss-crossing rivers further complicate the development of infrastructure networks. As a result of conflict, networks have been seriously damaged or left to deteriorate. Infrastructure investment needed in the DRC is among the highest in Africa. The DRC's population and economic activity are concentrated in three areas – Kinshasa in the southwest, Lubumbashi in the southeast, and Kisangani in the northeast. There is little well-developed infrastructure linking these three cities. The most serious impact of insecurity on infrastructure development has been felt in the east, where conflict and instability have had a major impact on infrastructure development. Since peace returned, there are promising signs. A privately funded global system for mobile communications (GSM) telephone network now provides a signal to two-thirds of the population at a reasonable cost. Significant external funding has been captured to rebuild the road network and there has been an increase in domestic air routes served. DRC has the largest hydropower resources in Africa, giving it the potential to not only meet its own energy demands cost-effectively but to become the continent's largest power exporter. Also, inland waterways can provide low-cost surface transport, with only relatively modest investments needed to improve navigability. An urgent infrastructure challenge is to increase the generation of power and deliver it in a more cost-effective way. Almost half of existing plants require refurbishment and capacity must increase by 35% over the next decade just to meet domestic demand. Both road and rail infrastructure are in dilapidated condition.

The following opportunities are key to promoting inclusive growth:

- **Growth and job creation:** Mining has potential for growth. In 2016, DRC's three most valuable exports, refined copper, cobalt and diamonds, accounted for 9.9% of the country's GDP. DRC's untapped mineral reserves are estimated to be worth \$24tn. Agriculture and forestry account for 21.1% of GDP and DRC contains 75m hectares of arable land and 50% of Africa's forest. Growth is hindered by a fragmented road, river and rail network, high demand on unreliable hydroelectric power supply and poor port infrastructure.
- **Inclusion and poverty reduction:** The lack of infrastructure in rural areas, as well as the collapse of infrastructure due to fighting, have left the majority without access to clean water sources, although the DRC holds over half of the water reserves in Africa. Families in poverty are unable to afford access to critical infrastructure and the majority of additional work, borne out of poor infrastructure (e.g. no electricity and no nearby water) is given to women.
- **Investment in infrastructure:** Though up to date figures are not available, the most credible previous estimate of DRC's infrastructure gap suggests its infrastructure spending gap is around \$4bn per year. Infrastructure deficits are constraining growth in key sectors, especially mining and agriculture.
- **Climate and environmental resilience:** Projections suggest that total rainfall amounts are unlikely to change drastically. However, there may be an increase in intense heavy rainfall events, with associated flooding risks, and more frequent dry periods. Projections suggest more water will be available for hydropower in the future, thus helping energy security.
- **DFID Comparative Advantage:** DFID's track record is primarily in roads and latterly in off-grid solar, and DFID DRC does not yet have an infrastructure component in its operational plan. But the department as a whole is now more interested in infrastructure for economic development. In a country with both a wealth of apparently game-changing opportunities and the biggest infrastructure gap in Sub-Saharan Africa, there is room for more ambition in DFID DRC's infrastructure programming.

### 1.2 Stakeholder Analysis

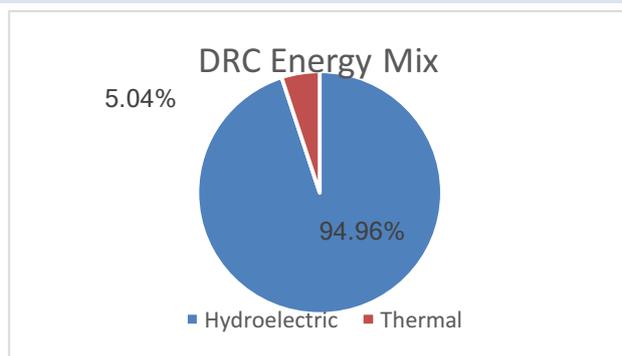
Public sector	<ul style="list-style-type: none"> <li>• Government has launched sectoral reforms to strengthen governance and transparency in the extractive industries (forestry, mining, and oil) and to improve the business climate.</li> <li>• The DRC is still recovering from conflicts in the 1990s, creating a protracted economic and social slump. Joseph Kabila has been head of state since 2001.</li> <li>• Lacking access to domestic and international financial markets, the Government has had to drastically reduce public expenditure to contain the deficit and limit monetary financing by the Central Bank.</li> <li>• Transparency and accountability are the primary challenges facing the Government as it strives to maintain economic and political stability.</li> </ul>
Private sector	<ul style="list-style-type: none"> <li>• Public-Private partnerships in DRC are commonly in use under the form of the French-law inspired mechanism of Public Service Delegations</li> </ul>
Donors	<ul style="list-style-type: none"> <li>• The World Bank portfolio comprises 29 projects (including regional integration projects) and 57 trust funds. These commitments total \$4.12bn, of which 45.53% has already been disbursed for national projects.</li> <li>• Elections are to be held in December 2018. Many donors will be scaling down or freezing</li> </ul>

# 1. Sectoral analysis

## 2.1 Energy

### Overview

- **Demand-Supply gap:** Demand gap of just below 3 GW and a 9% electrification rate (rural = 1%; urban = 19%).
- **Opportunities:** Potential to install up to 40 GW of hydropower capacity, as well as large reserves of: biogas, methane gas (50 bn cubic metres in Lake Kivu), solar radiation (up to 6.0 kWh/m<sup>2</sup>/day), wind, and geothermal.
- Has the potential to install up to 100,000MW of hydropower capacity.
- **Institutional challenges:** Société Nationale d'Électricité (SNEL) – the vertically integrated, state-owned, power generation, transmission, and distribution utility – was DRC's monopoly electricity supplier until 2014 and still produces 94% of total installed power. Due to below cost-recovery tariffs in urban areas, opaque power purchase agreements with mines, low billing collection rate, and poor commercial/technical performance, it has insufficiently invested in energy infrastructure



### Current Generation Capacity

- Total installed capacity: 2,677MW
- Hydroelectric: 2,542MW
- Thermal: 135MW

### Energy Access for households and business

- **Access:** SNEL accounts for just 500,000 registered household connections, with most consumers connected illegally to formal networks or independent grids.
- **Affordability:** SNEL's tariff is regulated and residential customers are charged \$0.07kWh, one of the lowest in the world. This does not cover SNEL's operational costs.
- Businesses rank electricity as their major constraint to the growth.

### Energy Planning

- Additional 4 GW capacity required by 2020
- Government passed the 'Electricity Law' in 2014 which removed SNEL's monopoly.
- SNEL is receiving technical assistance from Manitoba Hydro International

- The government has made electrifying new provincial capital cities a short term priority, and achieving universal electricity access in the long term, but there is no strategy or operational plan for this.

### Major investments planned

- In 2016 DFID launched the Essor programme's solar mini-grid project, targeting zones of at least 100,000 people.
- Inga 1, 2, & 3 Hydropower plants. Inga 3 has a predicted Generation capacity of 4800 MW
- World Bank EASE programme focused on electrification of provincial capitals.

## 2.2 Transport

### Overview

- DRC has just 0.24 and 0.15 km/100km<sup>2</sup> of rail and road network respectively.
- The country's road network is in an extremely bad state of repair following years of armed conflicts. The road network comprises 58,358km of national roads, 86,615km of rural roads, and 7,400km of urban roads.
- Only 5% of the 58,000km of the national roads are sealed. These sections are mainly located on the axis between Matadi and Kinshasa, Lubumbashi and the Zambian border and some sections in the eastern part of the country.
- The two main highways on the national road network are the East-West road (linking the port of Matadi to Lubumbashi via Kinshasa) and the North-South road (linking Lubumbashi to Goma, Bukavu and Kisangani).
- Recent road quality indicators suggest that the state of the country's limited paved network (fewer than 3,000km) has improved considerably and is now comparable with those of other low income countries in the region.
- The DRC has non-interconnected railways of 5,033km.
- Three public institutions, the Commercial Company of Transports and Ports (SCTP), the Railways of Uélé and the Société Nationale des Chemins de Fer du Congo (SNCC), ensure investments, management and exploitation of the existing infrastructures.
- The rail network is largely inherited from the colonial times and was renovated during the 1970s in some areas. The infrastructure is in poor condition, but the network manages to function despite considerable delays and numerous incidents (with the exception of the Railways of Uélé which is not operational).

- DRC has thousands of km of navigable waterways; potential for link ups to Trans-African Highways network.
- DRC has numerous, overlapping, agencies with legal authority on trade. Authorisation signatures are hard to obtain, regulations are complex and poorly codified, and corruption is common<sup>10</sup>. The government has not set out a transport sector strategy, but ADB is helping the government to produce a governance plan for investments and policies relating to transport.
- Air transport has not been able to fulfil its potential because of the dilapidated airport infrastructure and navigation equipment and the extremely weak technical and safety regulations.
- DRC has 54 airports, including 6 international airports, but the majority of them are poorly maintained with dilapidated infrastructure. As a consequence, large areas of the country remain unserved by air transport
- The government has recognised air transport's critical situation and its negative impact on economic development and is rehabilitating the sector's institutions and infrastructure.
- Laws and regulations have been put in place to improve the sector's institutional framework. (e.g. air transport regulation is now with the Civil Aviation Authority (AAC), and airports and air traffic management are with the National Airways Management Agency (RVA)). However, these institutions still suffer from poor governance and weak technical and managerial capabilities.
- With support from the AfDB and World Bank, infrastructure and equipment are being rehabilitated in three of the five international airports (Kinshasa, Ndjili, Lubumbashi, and Kisangani).

#### Import / Export of goods

Top 5 Exports	% GDP	Top Destination
Refined Copper	6.77	China – 32%
Cobalt	2.17	China – 99.3%
Diamonds	1.08	Belgium-Luxembourg 62%
Crude Petroleum	0.67	China – 40%
Coalt Ore	0.93	China – 99.7%

#### Trade corridors

- Major transport corridors: Lubumbashi-Durban; Kalemie-Dar es Salam; Bukavu-Mombasa; Mubumbashi-Lobito; Kinshasa-Pointe Noire.

#### Cross border trade

- Bilateral trade agreements with > 50 countries and belongs to multiple international & regional trade organisations, e.g. COMESA, ECCAS, WTO.
- Doing business rating: 182/190
- Average time through customs: 6.3 hours

- 152,373km road network; 60% of general interest network and 80% of agricultural network are in poor condition or impracticable.
- Transporting by river in DRC can cost a third of moving freight by road or rail.
- DRC's rail network is inefficient and tariffs are relatively high. 3 state-run companies manage rail transport.
- Matadi port is crucial for DRC's economy (the country has just 37km of coastline); can handle 5 million tonnes per year but currently operates at 2 million. Most ports in the country have limited draught.

#### Major investments planned

- Pro-Routes 2: targeting 1,000 km of high-priority roads network.
- ADB is studying construction of the road and rail bridge between Kinshasa and Brazzaville.
- PANAV: €60 million EU initiative focused on river and lake transport.

### 2.3 Digital Connectivity

#### Overview

- **Lack of connection:** Highly dependent on costly satellite connectivity for international bandwidth capacity, and therefore has very low internet penetration.
- **Institutions:** The ARPTC was created in 2002 and is the regulatory body for the telecommunications sector. The SCPT, created in 2008, previously had monopoly rights on the ICT sector. The SOCOF was set up in 2016 to build, operate and commercialise the fibre optic network.

#### Internet Connectivity

% of individuals using the internet		6.21%
Internet	GSMA index	13.13
	Rank (/170)	167
Bandwidth per user	GSMA index	8.70
	Rank (/170)	(=)164
E-Government Score		
Mobile Banking		Low use of mobile banking give relatively low mobile phone ownership

#### Mobile Connectivity

2G Network Coverage	GSMA index	0
	Rank (/170)	=162
3G Network Coverage	GSMA index	40.51
	Rank (/170)	157
4G Network Coverage	GSMA index	0
	Rank (/170)	=156
Cost of entry level basket (100 MB)	GSMA index	0.09
	Rank (/170)	169
Cost of entry level handset	GSMA index	47.92
	Rank (/170)	151
# of Mobile apps in national language	GSMA index	40.32
	Rank (/170)	133
Mobile phone subscriptions per 100 people		43.36

#### Transboundary dependencies

### Major investments planned

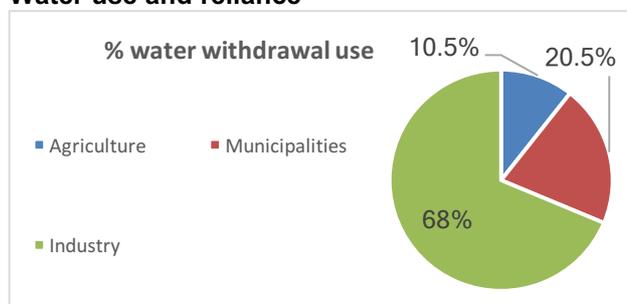
The Central African Backbone initiative by the World Bank and ADB (costing \$215 million and taking 10 years to construct) plans to link countries across Central Africa by a fibre optic cable network.

## 2.4 Water and Sanitation

### Overview

- **Institutional capacity:** The main driver of poor access rates to improved water and sanitation are the weak institutions, outdated sector policies, and lack of qualified technicians.
- **Impact on health:** Cholera and chronic malnutrition are endemic, with 28,000 cholera cases recorded in 2016.
- **Opportunities:** DRC has more than 50% of water reserves (surface and underground) of the African continent.

### Water use and reliance



### Agricultural water use

- The main cash crops include coffee, palm oil, rubber, cotton, sugar, tea and cocoa. Food crops also include cassava, plantains, maize, groundnuts and rice.
- 82% pop deriving livelihoods from agriculture
- Sector contributes 18% of GDP and accounts for over 60% of new jobs
- 56% population rural. 64.9% of which in poverty

80m hectares of extensive arable land, 4m hectares of irrigated land. Only 10% under cultivation

### Water resource availability

% Improved water resource access	46%
Proportion of total actual renewable freshwater resources withdrawn: MDG Water Indicator (Aquastat)	0.05%
% water received from neighbouring countries	29.9

### Infrastructure condition and investment

- 75% do not have access to safe water and 80-90% do not have access to improved sanitation.
- Key bottleneck impeding progress is the limited implementation capacity. Even as more finance is becoming available, the sector struggles to absorb it efficiently, hindered by weak institutions, outdated sector policies, a dearth of qualified technicians and managers, remaining insecurity, and a lack of support

- DRC is largely water autonomous, with 70% of its total actual renewable water resources generated internally from rainfall<sup>20</sup>.

### Major investments

DRC Urban Water Supply Project: \$256m

## 2.5 Urban Infrastructure

### Overview

- **Infrastructure development unable to keep up with urbanisation:** DRC's urbanisation has been fuelled mainly by push factors – avoiding conflict and inadequate rural services – rather than the pull factors of better employment and opportunities in cities. Urban poverty and service levels are consequently high. Prices in urban areas in DRC are about 40% higher than expected for its income and urbanisation rate.
- **Institutional capacity:** Urban development has been impaired by a cumbersome land management system that impedes land transactions. There is almost no urban planning; the 1957 urban planning law is outdated, and existent master plans are over 30 years old.
- **Opportunities:** DRC's urban population is expected to almost double its current level of approximately 35 million by 2030, with the capital Kinshasa becoming the largest megacity in Africa with 24 million people.

### Urban Structure

% urbanised	44.5%
# urban residents	~35 million
% living in informal settlements	75%
Urban poverty (%)	66.8%
Urban employment (%)	
- Total	96.3 [national]
- Youth	92.7 [national]
- Female	90.6 [national]

City size	# Cities	% Nat pop.	Tot pop.
Over 1m	6	24.8%	19,524,106
500k-1m	4	3.6%	2,805,922
100-500k	24	7.9%	6,226,747
50-100k	19	1.6%	1,277,238
20-50k	58	2.5%	1,953,757

### Major investments planned

Urban Development Project: Improve access to basic services and strengthen urban and municipal management - \$190m

**Urban infrastructure overview****Energy:**

- % urban population: 19%
- Business access to electricity: ~60% of firms in DRC obtain at least 10% of their electricity from a private generator
- Power reliability: 20 outages per month

**Water:**

- % of population with piped water into:
  - Dwelling: 3.1%
  - Yard/plot: 16.7%
- % household spend water utility: 1.26 [national]
- Cost of most recent flood event: Flooding in Jan 2018 in Kinshasa destroyed 465 houses and killed 51 people.

**Sewerage:**

- % with household toilet: 33.3
- % access to improved sanitation facility: 28.8%
- % with sewerage connection: 0.8%

**Urban Transit**

- Travel type in cities: In Kinshasa 80% of trips are made on foot
- % household spend transport: 4% (national figure)
- Commute time: Low av. speed for daily commutes between municipalities in Kinshasa: 14 km/hour
- Air pollution deaths in cities: 4,000/year

**3.0 Ongoing x-HMG Engagement**

Dpt/Org	Initiative	Value
DFID	Water, Sanitation and Hygiene Results Programme	£7.28m
	Support to the Water and Sanitation Programme (WSP) 2011 – 2015	£36m
	Transboundary Water Management in Southern Africa: Climate Resilient Infrastructure Development Facility	£20m
	Transboundary Water Management in Southern Africa: Capacity building to better manage shared water resources in the South African Development Community (SADC)	£9.4m
	Increasing sustainable access to water sanitation and hygiene in the Democratic Republic of Congo	£161.5m
	Geo-Referenced Infrastructure and Demographic Data for Development (GRID3)	£15m
	Roads in the East in the Democratic Republic of Congo Phase II	£150m
	Increasing sustainable access to water sanitation and hygiene in the Democratic Republic of Congo programme	£14.6m
World Bank	DRC-Multi-Modal Transp Additional Financing	\$180m
	DRC Urban Development Project FY13	\$100m
	DRC High Priority Roads Reopening and Maintenance - 2nd Additional Fin	\$125m
	DRC Urban Water Supply Project	\$190m