



Development pathways for the DRC to 2050

Infrastructure

Kouassi Yeboua

Last updated 15 May 2023

Infrastructure

Quality infrastructure not only enables business and industry development but also increases efficiency in the delivery of social services. Important basic infrastructure, such as water and sanitation facilities, roads, electricity, Internet and telecommunications, among others, plays a vital role in achieving sustainable and inclusive economic growth.

Infrastructure shortage is considered as one of the key factors that are impeding higher productivity and growth in the DR Congo.

Water, sanitation and hygiene (WaSH)

The DR Congo is considered to be Africa's most water-rich country with more than 50% of the African continent's water reserves, however, millions of Congolese do not have access to safe water.[1] Water and sanitation infrastructure is extremely dilapidated and inadequate, even in the capital city, Kinshasa. Between 1990 and the early 2000s, water and sanitation infrastructure collapsed and access to drinking water declined significantly due to conflicts and political crises.[2]

As a result of the relative stability, especially in the western provinces, since the mid-2000s, the water and sanitation sector in the DR Congo has been recovering, albeit slowly. The proportion of the population having access to improved water sources increased from 44.6% in 2000 to 57.6% in 2019 which is significantly below its peer groups. In 2019, 21.2% of the population had access to improved sanitation facilities, almost 10 percentage points below the average for low-income countries globally.

Water and sanitation infrastructure is chronically lacking in rural areas in the DR Congo. As of 2017, only 8.2% of the population had access to piped water in rural areas, up from its level of 3.4% in 2000. In rural areas, 24.2% of the population use non-piped sources while 52.8% of them use unimproved water sources. This dire situation is compounded by the lack of adequate sanitary facilities with 51.5% of the population in rural areas using unimproved sanitation.[3]

Access to adequate hygienic services is critical to prevent many diseases such as diarrhoeal and respiratory infections. According to the United Nations Children's Fund (UNICEF), children can reduce their risk of getting diarrhoea by more than 40% by handwashing with soap and water. As of 2017, only 4.5% of the population, with 2.2% in rural areas and 7.4% in urban areas, had access to basic handwashing facilities including soap and water in the DR Congo.[4]

The High-Quality Technical Assistance for Results (HEART) programme, funded by the United Kingdom, has provided £164.8 million over seven years (2013–2020) to improve water and sanitation infrastructure in the country.[5]

Overall, access to clean water and adequate sanitation has been increasing in the DR Congo, but the IFs forecast is that the country will trail further behind its peer groupings. More needs to be done to eliminate bottlenecks, such as lack of qualified technicians, that undermine progress in the sector. IFs estimates the proportion of the Congolese population with access to improved water sources at 92% and 47.8% for improved sanitation by 2050.

Energy and electricity

The DR Congo has abundant and varied energy resources such as hydroelectricity, biomass, solar, wind and fossil fuels, among others. For instance, the country possesses a huge potential of hydroelectric power estimated at 100 GW, which

represents about 13% of the world's hydroelectric potential.[6] The country also has potential in other sources of energy, estimated at 70 GW for solar and 15 GW for wind power. In sum, the DR Congo has the potential to become a leading exporter of electricity in Africa.[7]

Paradoxically, the DR Congo has one of the largest deficits in energy access in the world. The energy supply is largely insufficient for the country's needs and energy consumption comes mainly from biomass. Only 3% is generated by hydroelectric power, the rest is from charcoal and firewood.[8] Although progress has been made, the DR Congo still has one of the lowest rates of electrification globally.

The share of the population with access to electricity increased from 6% in 2005 to 19% in 2018. IFs estimated electricity access at 21% in 2019, far below the averages for low-income countries globally and for sub-Saharan Africa which were respectively 41.7% and 46.4% in the same year (Chart 13). The country ranks 48th lowest of 54 countries in Africa in terms of electricity access rate.

Chart 13: Access to electricity for DRC and other groups



Source: Forecast in IFs version 7.54; historical data from World Bank

[View on Tableau Public](#)

Navigation icons: back, forward, search, and share.

On the Current Path, 25% of the population will have access to electricity by 2025, about 30% in 2030, and 55.7% by 2050. Unfortunately, the government's ambitious target to increase the proportion of the population that has access to electricity to 60% by 2025[9] is out of reach.

Access to electricity is heavily biased in favour of the urban and mining areas, notably Lualaba and Haut Katanga provinces where the copper and cobalt industry is concentrated. In rural areas, electricity is almost non-existent; only 1% of the rural population has access to electricity against 42% in urban areas. Access is also uneven across the provinces, ranging from

44% in Kinshasa to 0.5% in Kasai Occidental.[10]

The energy used by households in rural areas comes mainly from firewood (traditional cookstoves) which poses a risk to the environment with the acceleration of deforestation. It also affects the health of infants and children by causing respiratory problems. Also, cookstoves limit study hours for learners because the daily collection of firewood, which sometimes involves young girls, may deprive them of time that could be devoted to education. It is therefore very concerning that the IFs forecast for the percentage of households that use traditional cookstoves is still at 59% by 2050.

The existing and very limited power supply is also unstable, and electricity shortages and power blackouts are recurrent. For instance, it is estimated that, in Kinshasa, about 21% of those who have access to electricity receive less than four hours of power per day, and on average, electricity shortages occur 10 days per month in the country.[3] Due to this unreliable electricity supply, about 60% of firms in the DR Congo have back-up generators against 43%, on average, in sub-Saharan Africa.[11] These frequent electricity shortages penalise the productive sectors of the economy and hamper productivity and growth.

Out of 100 GW hydroelectric potential, only about 2 677 MW have been installed, and only 1 100 MW are exploited. This power is mainly generated by the Inga I and Inga II dams. These two dams currently operate at around 50% of their capacity due to lack of maintenance. The World Bank has been leading efforts to rehabilitate turbines at Inga I and Inga II but the project is not yet complete.

In addition, the state power utility, *Societe Nationale d'Electricite* (SNEL), in charge of electricity production, transportation and distribution is highly inefficient. Almost half of the electricity produced is lost during transmission and distribution due to the obsolescence of the equipment and the absence of an adequate maintenance system.[12]

Aside from the national grid, there are some mini-grids, albeit very limited. For instance, Synoki, Hydroforce and Virunga operate mini-grid hydroelectric projects, and their market share of the electricity sector is estimated at 6%.[13] According to the International Renewable Energy Agency (IRENA), only 3.66 MW of solar photovoltaics (PV) had been installed by the end of 2017. Off-grid systems are usually easier and less costly to implement and could be one of the solutions to the growing unmet electricity demand in the country.

There are some promising actions to resolve the problem of access to electricity in the country. The Grand Inga Dam is a proposed giant hydroelectric scheme with an expected capacity of 44 000 MW of electricity. According to projections, the Grand Inga Hydroelectric Project could meet the entire need of the DR Congo and even supply half of the African continent with electricity. The project will cost US\$80 billion and is scheduled for completion in seven phases.[14]

The first phase (Inga III), which is estimated to cost US\$14 billion, will generate 4 800 MW of electricity and its entry into service was initially scheduled for 2024 or 2025.[15] However, the execution of the project has been significantly delayed. In 2016, the World Bank suspended its funding towards the construction of the Inga III phase because the then president, Joseph Kabila, decided to bring the project oversight committee into his presidency, and it, therefore, lacked transparency. The project is still ongoing, albeit at a very slow pace. The Inga III Project is now estimated to come on stream in 2030 at the earliest, dependent upon a partnership between South Africa and the DR Congo.[16]

In March 2019, to speed up access to renewable energy, the board of the African Development Bank approved a US\$20 million financing package to back renewable-based mini-grid projects in the DR Congo. The Green Mini-Grid Programme will supply electricity to 21 200 households, and 2 100 buildings and small and medium-sized firms.[17]

Roads

The DR Congo has very poor transport infrastructure. About half of the country is inaccessible by road including the capital city Kinshasa which cannot be reached by road from much of the rest of the country. Only a few provincial capitals are connected to Kinshasa. The country is effectively an 'archipelago' state; the only effective means to travel and trade internally is by air — which is costly — or via the Congo River.

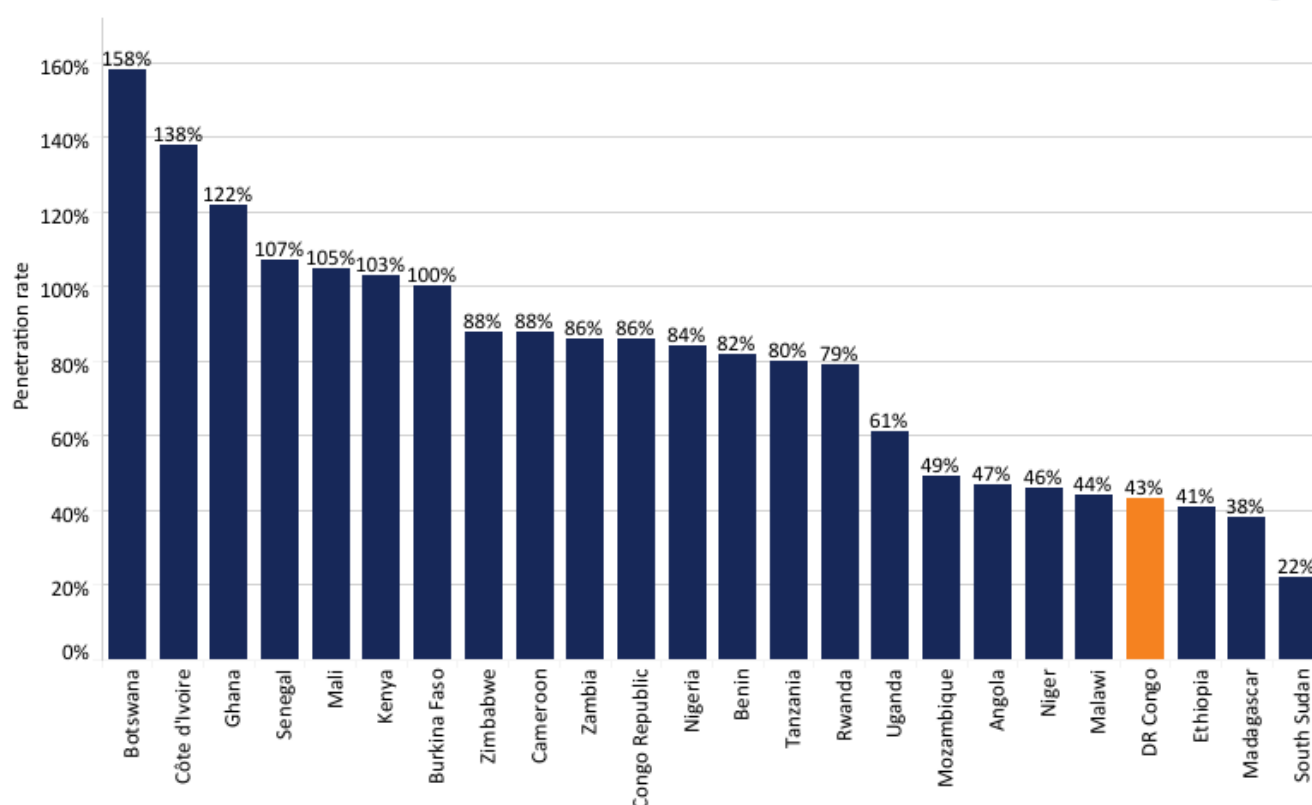
The few existing roads and railways are also generally dilapidated. As of 2015, the DR Congo had a total road network of 152 373 km, with only 3 047 km paved (2%). The total urban and non-urban road networks were respectively 7 400 km and 144 973 km. The country also has 4 007 km of railways but an impressive 15 000 km of waterways.^[18] Armed conflict has however significantly damaged road and rail networks in the DR Congo and both operate at about 10% and 20% of their levels in 1960.

According to the World Bank, the DR Congo is among the countries with the highest deficit of transport infrastructure in Africa, and without vigorous actions to curb this trend, it will take more than a century to close this infrastructure gap.^[12] According to the IMF, 'Difficulties in transportation constitute a major obstacle to the realisation of the DR Congo's immense agroindustrial and mining potential.'^[19] It is also one of the main stumbling blocks in the physical integration of the country and the extension of state authority.

Information and communication technology (ICT)

The mobile phone sector is perhaps the most dynamic and reliable infrastructure sector in the DR Congo. The country is considered as one of the top ten African countries with a very promising market for mobile phones.^[20] Currently, six mobile phone companies operate in the sector, namely, Airtel, Vodacom, Orange, Africell, Supercell and Tatem Telecom. Mobile cellular subscriptions have grown rapidly over the past decade. As of 2018, there were 36.47 million mobile cellular subscriptions against only 1.25 million in 2003.^[21] This translates to about 43 subscriptions per 100 people in 2018, reflected in Chart 14.

Chart 14: Mobile phone service penetration rate in selected Sub-Saharan African countries, 2019



Source: Data from GSMA Intelligence

[View on Tableau Public](#)

Navigation icons: back, forward, search, and share.

There is a disparity between rural and urban areas in terms of access to mobile phone service in the DR Congo. According to the latest Demographic and Health Survey 2013/2014, about 80% of households in urban areas have access to mobile phone services compared to 20% of households in rural areas. In 2019, subscriptions to mobile Internet services increased by 18.5% to reach 15.1 million people while Mobile Money service subscriptions increased by nearly 14% to reach nearly seven million people.[22]

Despite this improvement, the country lags behind many of its peers in Africa in terms of Internet access and mobile phone services. Poor infrastructure, such as the frequent power shortages and high taxation, as well as complex regulations, are some of the bottlenecks that retard the expansion of the sector.[23]

Although there have been some improvements in infrastructure in the DR Congo since the mid-2000s, the country is still at the bottom of the ranking for almost all measures of access to infrastructure. The infrastructure deficit is particularly severe in road transport, electricity supply and access to improved water sources.

Improving the connectivity between provinces through quality roads will inevitably promote trade and inclusive growth. Initiatives, such as the infrastructure-for-minerals deal with China, could improve infrastructure development in the country if well managed.

In the latest version of the contract, Chinese companies would spend US\$3 billion on infrastructure rehabilitation and construction, including roads, railways and hydroelectric structures, among others. However, the agreement is skewed towards China. The roads are mostly towards mining areas and mining concessions are believed to be worth much more

than the amount dedicated to infrastructure projects in the country. Also, a decade after the agreement, the DR Congo does not seem to have obtained the promised beneficial socio-economic outcome as the infrastructure construction has incurred significant delays.^[24]

Endnotes

1. UNICEF, Democratic Republic of Congo, [Water, sanitation and hygiene](#)
2. Water and Sanitation Program, [Water supply and sanitation in the Democratic Republic of Congo](#), AMCOW Country Status Overview, 2011
3. WHO/UNICEF, [Joint Monitoring Programme](#), 2019.
4. WHO/UNICEF, [Joint Monitoring Programme](#), 2019,
5. High-Quality Technical Assistance for Results (HEART), [Increasing sustainable access to water, sanitation, and hygiene \(WASH\) in the Democratic Republic of Congo: Annual review 2018](#)
6. Nations Unies, Commission Economique pour l'Afrique, Profile de pays: République démocratique du Congo 2017, Addis Ababa: NU.CEA, 2018-03,
7. PricewaterhouseCoopers, [Africa gearing up](#), 2013
8. B Naughton et al, DRC survey: an overview of demographics, health, and financial services in the Democratic Republic of Congo, START Center, University of Washington, March 2017
9. PricewaterhouseCoopers, [Africa gearing up](#), 2013,
10. African Development Bank, DRC Green Mini-Grid Program, 2019, www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/DRC_-_PAR_GREEN_MINI-GRID_PSN.pdf.
11. World Bank, [Increasing access to electricity in the Democratic Republic of Congo: Opportunities and challenges](#), 2020,
12. V Foster and DA Benitez, [The Democratic Republic of Congo's Infrastructure: A Continental Perspective](#), Washington DC: World Bank, 2011
13. African Development Bank, [DRC Green Mini-Grid Program](#), 2019
14. M Mateso, RD-Congo: la construction d'Inga, le plus grand barrage du monde, peine à démarrer, Geopolis, 16 March 2015.
15. M Mateso, RD-Congo: la construction d'Inga, le plus grand barrage du monde, peine à démarrer, Geopolis, 16 March 2015.
16. Congo Research Group, I need you, I don't need You: South Africa and Inga III, March 2020, Congo Research Group and Phuzumoya Consulting.
17. African Development Bank, [DR Congo Green Mini-Grid Program](#), 2019
18. Central Intelligence Agency, [The world factbook](#), 2020
19. B Akitoby and M Cinyabuguma, Sources of Growth in the Democratic Republic of the Congo: A Cointegration Approach, IMF Working Paper WP/04/114, July 2004, 10.
20. B Frégist, [Téléphonie mobile: la RDC parmi les 10 marchés du mobile les plus prometteurs d'Afrique](#), Digital Business Africa, 2014
21. See: [Number of mobile cellular subscriptions in the Democratic Republic of the Congo from 2000 to 2020](#)
22. E Mboyo, [RDC: sociétés: la rédaction](#), 2019
23. Deloitte, [Digital inclusion and mobile sector taxation in the Democratic Republic of Congo](#), 2015
24. AM Larrarte and GC Quiroga, The Impact of Sicominas on Development in the Democratic Republic of Congo, International Affairs, 95:2, 2019, 423-446.

Donors and sponsors



Reuse our work

- All visualizations, data, and text produced by African Futures are completely open access under the [Creative Commons BY license](#). You have the permission to use, distribute, and reproduce these in any medium, provided the source and authors are credited.

- The data produced by third parties and made available by African Futures is subject to the license terms from the original third-party authors. We will always indicate the original source of the data in our documentation, so you should always check the license of any such third-party data before use and redistribution.
- All of our charts [can be embedded](#) in any site.

Cite this research

Kouassi Yeboua (2025) Development pathways for the DRC to 2050. Published online at futures.issafrica.org. Retrieved from <https://futures.issafrica.org/special-reports/country/drc/> [Online Resource] Updated 15 May 2023.

About the authors

Dr Kouassi Yeboua previously worked as a Senior Researcher at AFI, where he led significant ISS studies on the long-term development prospects of the Democratic Republic of Congo, the Horn of Africa, Nigeria, Malawi, and Mozambique. His research focuses on development economics, macroeconomics, gender, and economic modeling. He holds a PhD in Economics.

About African Futures & Innovation

Scenarios and forecasting can help Africa identify and respond to opportunities and threats. The work of the African Futures & Innovation (AFI) program at the Institute for Security Studies aims to understand and address a widening gap between indices of wellbeing in Africa and elsewhere in the world. The AFI helps stakeholders understand likely future developments. Research findings and their policy implications are widely disseminated, often in collaboration with in-country partners. Forecasting tools inspire debate and provide insights into possible trajectories that inform planning, prioritisation and effective resource allocation. Africa's future depends on today's choices and actions by governments and their non-governmental and international partners. The AFI provides empirical data that informs short- and medium-term decisions with long-term implications. The AFI enhances Africa's capacity to prepare for and respond to future challenges. The program is headed by Dr Jakkie Cilliers.