Infrastructure Sector Literature Review Report

Data Gap Initiative (DGI) Internship Program – Week 1  
Group: da-22

# 1. Introduction

Infrastructure development is a key driver for progress across the African continent and a critical enabler for productivity and sustainable economic growth. It contributes significantly to human development, poverty reduction, and the attainment of the Millennium Development Goals (MDGs). Investment in infrastructure accounts for over half of the recent improvement in economic growth in Africa and has the potential to achieve even more.  
  
This literature review seeks to identify and document existing data on infrastructure across Africa and highlight critical data gaps that hinder effective planning, monitoring, and investment.

# 2. Methodology

Our group divided research responsibilities based on sub-sectors:  
- Roads & Transportation: Patrick Benjamin  
- Electricity & Housing: Olive Mwende  
- Water & Sanitation: John Confidence Bello  
- Waste Management: Patrick Benjamin  
- ICT Infrastructure: John Confidence Bello

We used the following methods:  
- Online literature search via World Bank Open Data, and national open data portals.  
- Review of government reports, NGO publications, and media articles.  
- Identification of data portals and databases with infrastructure-related information.

# 3. Overview of Infrastructure in Africa

Infrastructure development is a major catalyst for economic growth and transformation across Africa. According to the African Development Bank, over 50% of Africa’s recent economic growth is linked to infrastructure investment.

# Major Investments

* **African Infrastructure Investment Fund 2 (AIIF2):** Plans to raise $600M–$1B for unlisted infrastructure investments across Sub-Saharan Africa, focusing on toll roads, renewable energy, ports, water, and social infrastructure.

Key Country Highlights

Guinea:

* **Souapiti & Amaria Dams:** Expand energy capacity significantly.
* **Airport & Regional Energy Projects:** Upgrades and interconnection with OMVG countries for clean energy exchange.

Ghana:

* **Marine Drive Project:** Major urban redevelopment.
* **Rail Network Expansion:** Standard gauge line to link Ghana to Burkina Faso.

Tanzania;

* **East African Crude Oil Pipeline (EACOP):** 1400km pipeline from Uganda to Tanzania.

Kenya:

* **LAPSSET Corridor Project:** $22B mega project includes ports, pipelines, highways, and rail to boost GDP.

Nigeria:

* **Zungeru Hydropower Project (700MW)**: One of Nigeria’s biggest, nearing full operation.
* **Lagos-Ibadan Expressway & Abuja-Kaduna-Zaria-Kano Road**: Major expressways undergoing reconstruction/expansion.

# 4. Sub-sectors in Infrastructure

# A. Water Supply and Sanitation

‎Access to water and sanitation in sub-Saharan Africa has improved but remains the lowest among developing regions. From 1990 to 2008, safe drinking water access rose from 49% to 60%, and sanitation from 28% to 31%, failing to meet the Millennium Development Goals. The Sustainable Development Goals (SDG 6) now track water, sanitation, and hygiene separately. As of 2020, only 35% of sub-Saharan Africans had piped water, with rural areas especially underserved. In schools, basic WASH services remain low, especially in rural areas. Poor water access negatively affects children's school attendance and academic performance.

‎Groundwater is crucial for water supply and livelihoods in sub-Saharan Africa due to its wide availability, good quality, and resilience during droughts. Despite this, access to clean drinking water remains limited. A 2007 study found that over 40% of Africans, especially in North and Southern Africa, rely on groundwater as their main drinking source. In urban areas, piped water accounts for 39% of drinking water, while boreholes are increasingly used (24%). However, only 16% of sub-Saharan Africans had household water connections as of 2004. Challenges like poor infrastructure maintenance, pollution, inadequate sanitation, infrequent water quality testing, and lack of public education hinder safe water access.

‎‎https://en.m.wikipedia.org/wiki/Water\_supply\_and\_sanitation\_in\_sub-Saharan\_Africa

# B. Road transportation and solid waste management

Road transportation and solid waste management are vital to sustainable urban development across Africa. Efficient road networks enable trade, mobility, and access to services, while effective waste systems protect public health, environment quality, and economic opportunity and can lead to national growth. As African cities expand rapidly, especially in low income and informal settlement, integrated planning in both sectors becomes increasingly essential.

The two subsectors are deeply interconnected in reality, poor roads hinder effective waste collection and transportation, while uncollected waste degrades road infrastructure. Despite their importance, both subsectors suffer from systemic inefficiencies, inadequate funding, and critically substantial data gap that constrain planning, monitoring, and policy execution.

# C. Telecommunication/ICT

Telecommunications, a key pillar of ICT (Information and Communication Technology), plays a vital role in Africa’s socio-economic development by enabling communication, information access, digital services, and business operations. Over the last two decades, Africa has experienced significant growth in mobile telephony, internet penetration, and digital services. Mobile subscriptions have grown rapidly, and there’s been a rise in mobile money, e-commerce, and digital inclusion efforts.

However, the sector is still evolving, and several **challenges and data gaps** persist.

# D. Electricity

Reliable and timely electricity data is vital for driving energy access, planning infrastructure investments, and achieving Sustainable Development Goal (universal access to affordable, reliable, sustainable, and modern energy). In Africa, electricity data plays an important role in monitoring grid expansion, rural electrification, renewable energy integration, and off-grid solutions. Despite numerous initiatives and growing investments in energy infrastructure, the continent still faces significant data gaps that hinder evidence-based policy, financing, and tracking of progress.

The current electricity and energy data landscape in Africa is shaped by sources like the Africa Energy Portal, World Bank, and IEA, which provide broad estimates on generation, access, and grid coverage. However, detailed, up-to-date data especially on rural electrification, off-grid systems, and distribution networks remains limited and inconsistent. Many countries rely on outdated surveys or modeled figures rather than real-time utility reporting, making it hard to track progress toward universal access and sustainable energy goals.

# E. Housing and Urban Development

Africa faces a **severe housing crisis**, with an estimated **50+ million unit deficit** across the continent. Rapid urbanization (3.5% annually) is outpacing housing supply, pushing many into informal settlements where **60–70%** of urban populations now live.

Countries like **Nigeria, Kenya, South Africa, and Ethiopia** are most affected, each struggling with large backlogs and limited financing options. While Nigeria needs around **700,000 homes per year**, it delivers less than **100,000**. Kenya needs **200,000 annually**, but supplies just **50,000**. South Africa’s construction has dropped sharply over the years, and in Ethiopia, the majority of Addis Ababa’s population lives in slums.

Some governments are introducing **public-private partnerships**, **housing levies**, and **urban renewal programs** to address the crisis, but financing gaps and inequality persist.

To make progress, Africa needs **sustained investment**, better **policy frameworks**, and stronger **data systems** to support inclusive, affordable, and sustainable housing solutions.

# 4. Existing Data Sources

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| --- | --- | --- | --- | --- |
| Data Source | Description | Sector Focus | Coverage | Accessibility |
| WHO/UNICEF JMP | Global database on drinking water, sanitation, and hygiene (WASH) | Water supply and Sanitation | Africa-wide | Open |
| African Dev. Bank | Investment & project data | All sectors | Africa | Partial |
| Nigeria NBS | Government statistics portal | Roads, Housing | Nigeria | Open |
| DHS | Infrastructure-related household data | Water, Sanitation, Electricity | Multiple countries | Open |

# 5. Identified Data Gaps

|  |  |  |
| --- | --- | --- |
| Sub-Sector | Data Gaps | Why It Matters |
| Roads | Dates of constructions, upgrades, and degradation are generally unavailable, making changes over the time hard to assess. | Lack of reliable transport or waste volume data prevents accurate demand forecasts, often resulting in either under or over-investment in infrastructure**.** |
| Electricity | Inconsistent off-grid electrification data | Affects renewable energy planning |
| Water | Lack of location-specific access data | Hinders sanitation programs |
| Housing | No national housing inventory in most countries | Makes urban planning difficult |

# 6. Ongoing Initiatives & Stakeholders

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| --- | --- | --- |
| Initiative | Organization | Focus |
| Africa Infrastructure Knowledge Program | African Development Bank | Infrastructure database & analysis |
| Energizing Education Programme | Nigeria REA | Power supply to tertiary institutions |
| Clean Water for All | UNICEF & Partners | Rural water access projects |
| Housing Needs Assessment | UN-Habitat | Urban housing challenges |
| Mapping Internet Access | Alliance for Affordable Internet | Broadband accessibility |

# 7. Opportunities and Recommendations

Opportunities:

- Leverage satellite data and mobile GPS tools for real-time mapping.  
- Partner with local universities and civil engineers for field surveys.  
- Use crowdsourcing platforms (e.g., Mapillary, OpenStreetMap) to gather road and infrastructure data.

Recommendations:

- Establish a national infrastructure database in each country.  
- Standardize infrastructure data collection across sectors.  
- Build collaborations between governments, private sector, and research institutions.

# 8. Conclusion

# The infrastructure sector remains a cornerstone for sustainable development across Africa. Core sub-sectors such as roads, electricity, water supply, sanitation, housing, telecommunications, and waste management are vital for economic growth, social inclusion, and improved quality of life. While significant strides have been made in policy formulation, financing, and project execution, critical data gaps, poor coordination, and infrastructure deficits continue to undermine progress.

# 9. Appendix

Links to Key Resources:

- World Bank Open Data – Infrastructure: https://data.worldbank.org/  
- Nigeria NBS Portal: https://www.nigerianstat.gov.ng  
- DHS Program: <https://dhsprogram.com/>

- https://en.m.wikipedia.org/wiki/Water\_supply\_and\_sanitation\_in\_sub-Saharan\_Africa