

Vodacom Report:  
Decarbonising Africa's ICT sector

# Executive summary

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# Decarbonising Africa's ICT sector

This executive summary distils the findings of a multi-chapter report. Drawing on sectoral research, case studies, and stakeholder interviews, this report provides an analysis of the current landscape, project future risks, and recommend actionable solutions for the decarbonisation of Africa's ICT sector, with a focus on Mobile Network Operators (MNOs).

## The current situation: systemic barriers to decarbonisation

Africa stands at a critical juncture in its low-carbon transition. The continent is highly vulnerable to climate change, with impacts already costing billions annually and threatening socioeconomic stability. Achieving net zero greenhouse gas emissions is essential, yet Africa's energy systems face deep-rooted challenges:

### Weak and unreliable grid infrastructure

Many regions lack stable electricity, especially rural areas. Frequent outages disrupt services, and 600 million people in Africa, especially in sub-Saharan Africa remain without power. Electrification rates need to triple to achieve universal access by 2030.

### Financial and institutional constraints

Utilities face financial deficits due to low tariffs, poor payment collection, theft, and inefficiencies, limiting investment in grid expansion and renewables.

### High carbon intensity of electricity supply

The carbon footprint of electricity varies widely across Africa. While some countries leverage hydro and geothermal resources, others such as South Africa remain heavily dependent on coal, resulting in high emissions and pollution.

### Limited market mechanisms for renewable energy procurement

African MNOs have restricted access to market mechanisms such as Power Purchase Agreements (PPAs), Renewable Energy Certificates (RECs), and green tariffs, hindering decarbonisation and investment in renewables.

### Complex regulatory and political environments

Uncertainty and fragmented responsibilities deter private investment and slow clean energy deployment.

### Limited private sector participation in transmission and distribution

Power sectors are mostly state owned/controlled, with little private involvement in transmission and distribution, restricting innovation and capital inflow.

### Reliance on diesel generators

Due to unreliable grids and limited alternatives, MNOs and many other sectors depend heavily on diesel generators, which are costly, polluting, and undermine decarbonisation efforts. Current regulatory, financial, and operational frameworks inadvertently incentivise continued reliance on diesel generators, while clean energy alternatives face higher upfront costs, longer approval timelines, and limited access to finance.

If the current systemic barriers to decarbonise Africa remain unaddressed, the continent faces escalating climate and economic vulnerability, as continued reliance on fossil fuels will increase greenhouse gas emissions, air pollution, and health impacts, while undermining energy security and competitiveness. Unreliable power will also stall digital and socioeconomic development, limiting the reach and quality of digital infrastructure and impeding progress in education, healthcare, business, and civil society participation. Without enabling policies and financial mechanisms, Africa risks missing out on investment and innovation opportunities, losing the chance to attract climate finance, develop local industries, and create jobs in the clean energy sector. Furthermore, entrenched inequality will persist, with rural and underserved communities remaining disconnected and trapped in cycles of poverty, unable to access essential services.



## Pathways to transformation

A systems thinking approach reveals that decarbonisation is achievable through coordinated, multi-stakeholder action. Potential solutions include:

### 1 Power sector reform and grid modernisation

#### Strategic policy and regulatory reform

Governments to consider restructuring tariffs, phasing out diesel subsidies, and creating clear, stable regulatory frameworks to attract private investment and enable market-based procurement of renewables.

#### Public-Private Partnerships (PPPs)

PPPs can mobilise capital and technical expertise for grid expansion, reliability improvements, and renewable energy projects. Case studies demonstrate that strong government leadership and effective public-private collaboration are critical to mobilising capital, improving grid reliability, and scaling renewable energy infrastructure.

#### Independent Power Producers (IPPs) and PPAs

Enabling IPPs to sell power via standardised PPAs increases renewable capacity and grid resilience. Wheeling and virtual wheeling arrangements further facilitate renewable integration.

### 2 Off-grid and decentralised solutions

#### Mini-grids and micro-grids

Decentralised energy systems are essential for powering remote MNO base stations and rural communities. MNOs can serve as anchor customers, improving the bankability of mini-grid projects.

#### On-site renewables and storage

Solar photovoltaic (PV), advanced battery technologies like sodium-ion, and hybrid systems can reduce reliance on diesel, though challenges remain around cost, security, and technical integration.

### 3 Market mechanisms and financial innovation

#### RECs and green tariffs

Developing robust REC frameworks and green tariffs incentivises renewable investment and provide MNOs with credible decarbonisation pathways.

#### Innovative financing

Green bonds, concessional loans, blended finance, and revolving credit lines, ideally in local currency, can lower capital costs and de-risk investments. Development Finance Institutions (DFIs) play a catalytic role.

#### Energy Service Companies (ESCOs)

ESCOs can deliver turnkey energy efficiency and renewable projects, reducing upfront costs and risk for MNOs.

### 4 Capacity building and collaboration

#### Skills development and technical assistance

Training programmes and partnerships with DFIs, multilateral development banks (MDBs), and industry associations are needed to build local expertise and institutional capacity.

#### Policy advocacy and stakeholder engagement

MNOs, governments, regulators, and financiers must collaborate to streamline regulatory processes, share best practices, and align incentives.

#### Community engagement

Inclusive approaches ensure that decarbonisation delivers social as well as environmental benefits, supporting job creation and improved energy access.

## Conclusion

Africa's abundant renewable resources and growing climate finance present a historic opportunity for low-carbon growth. MNOs, as major energy consumers and digital enablers, are pivotal to this transition. Realising the continent's potential requires unprecedented collaboration, bold policy reform, and innovative financing.

If stakeholders act decisively, Africa can leapfrog to a resilient, inclusive, and sustainable energy future unlocking economic growth, improving quality of life, and contributing to global climate goals.

## Vote of thanks

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This report draws on interviews with a diverse set of organisations across the ICT and energy value chains. Their perspectives helped shape a grounded understanding of current challenges and highlighted opportunities for collaboration to accelerate decarbonisation across Africa's ICT sector.

- Africa Forum for Utility Regulators
- Baker McKenzie
- GSMA
- Huawei
- Nokia
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- Vodacom OpCos
- And other technology providers and industry stakeholders

