

Digital Resilience & Sustainability in the World Bank

May 2026



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World Bank's Approach to Digital Resilience and Sustainability

WHAT WE DO

We mainstream **digital sustainability and resilience priorities** across WBG operations and strategies.

HOW DO WE HELP

- Offer **technical assistance** and **capacity-building workshops** to client countries
- Contribute to **country strategies** to enhance digital sustainability and resilience

Last fiscal year,
nearly **half of**
World Bank Group
digital project
investments were
resilient and
sustainable



The Dual Imperative: Resilience and Sustainability

The Digital Divide is a Resiliency Divide

Connectivity is critical to disaster response and **recovery and delivery of emergency services** after a hazard occurs.

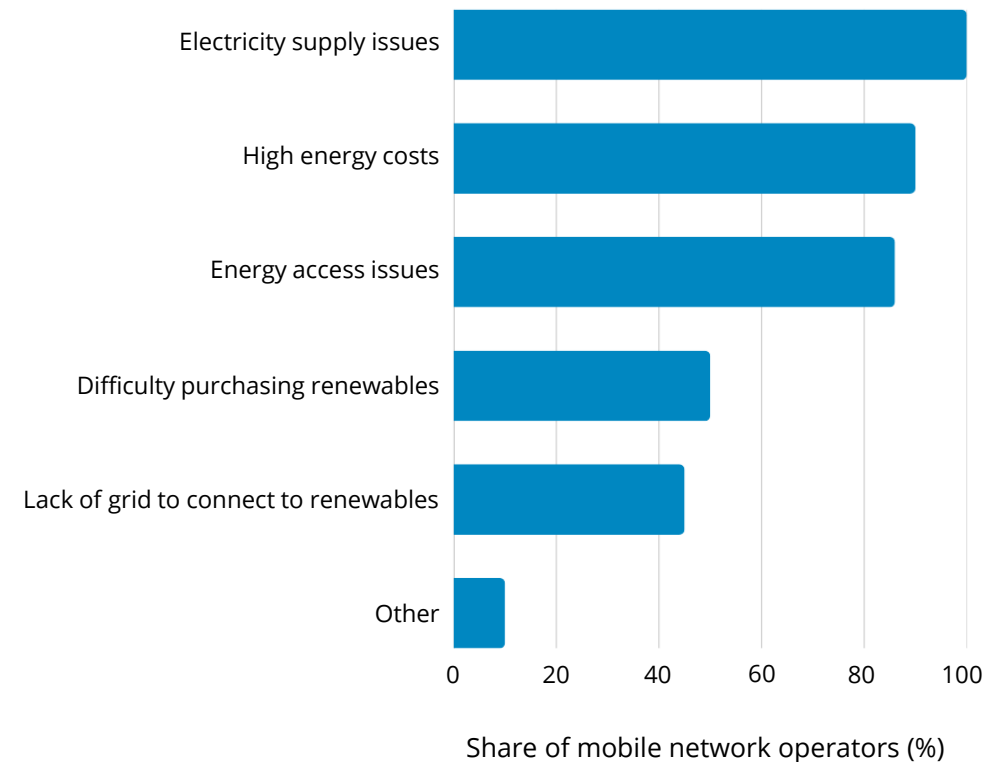
Countries able to use digital databases and trusted data sharing reach **3X more beneficiaries** than those without.

Digital Inclusion Relies on Resource Access

Digital infrastructure requires and **strains resources**, and demand is growing rapidly
2.6 billion people remain offline, the vast majority of whom are concentrated in developing countries

Share of Sub-Saharan African mobile network operators facing energy-related challenges

Source: GSMA, *Energy Challenges for Mobile Networks in Sub-Saharan Africa* (2023)

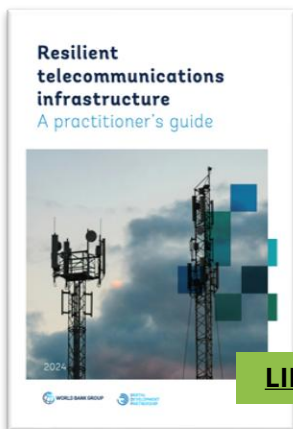


Resilient and Sustainable Telecom Infrastructure

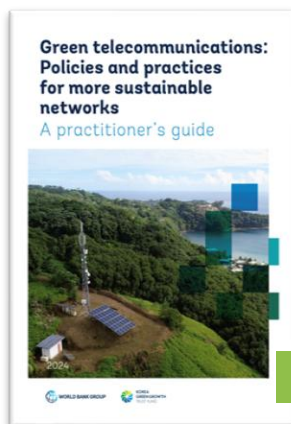
FOCUS AREAS

Strengthening the **resilience** of digital infrastructure is therefore essential to protect investments and minimize costly downtime.

Investing in **sustainable** networks by integrating energy efficiency and renewable energy can lower operating costs, reduce pressure on scarce energy resources, and minimize waste and inefficiencies.



[LINK](#)



[LINK](#)

OUR RESOURCES

COUNTRY EXAMPLES

- **Congo** Digital Acceleration Project is conducting site-specific climate risk assessment of digital infrastructure
- **Philippines** Digital Infrastructure Project will expand underground and weather-resistant fiber optic cables
- **Nigeria** BRIDGE project will roll out a national energy efficient fiber network based on an energy mapping for planned telecom sites
- Projects to upgrade or replace energy-intensive telecom assets with energy efficient fiber are ongoing in **Eastern Africa, Kazakhstan, Malawi, the Marshall Islands, and others**
- Projects in **Mozambique, Rwanda, Angola, Philippines, and Samoa** include requirements to power any new off-grid network infrastructure with renewable energy when possible.



Flash floods sever fiber optic cables in Kenya, 2022



Resilient and Sustainable Data centers

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Data centers are an essential part of the digital transformation enabling access to cloud services and AI applications while requiring significant resources, particularly energy.

OUR WORK

Establish access to modern, cost-effective data infrastructure that is sustainable, resilient, and tailored to each country's needs.



[LINK](#)

COUNTRY EXAMPLES



EDGE-certified Rack center in Nigeria is expected to achieve 35% energy savings and 41% water savings

- WB projects in **Brazil, Samoa, DRC and other countries** have invested in resilient and energy efficient data centers, including commitment to achieving **green data center certification such as EDGE** (Excellence in Design for Greater Efficiencies) ensuring at least **20 percent savings on energy**, water, and carbon from material use
- **Mozambique Digital Acceleration Project** is strengthening data hosting by relocating servers from flood-prone areas and applying risk-informed design
- **Digital Sao Tome and Principe** Additional Financing has conducted *climate-informed site selection* for data center and developed Disaster-Recovery Plan reflecting **Uptime Institute TIER 3 Standard and TIA 942 Rated 3**



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E-waste management

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Electronic waste is the fastest growing solid waste stream in the world. As demand for digital devices grows, governments need to take steps to properly manage, treat, and dispose of e-waste to prevent risks to the environment and human health.



OUR WORK

Strengthen policies, practices, and investment in e-waste management capacity and infrastructure, creating jobs

The **World Bank** is supporting several **countries** on e-waste management in addition of **Republic of Congo**.

Rwanda Digital Acceleration Project is financing the scale-up to 30 PPP driven e-waste collection points and provides training and communication support

COUNTRY CASE

E-waste management and legislation/initiatives

- **Safaricom (Kenya)** is a leading mobile network operator in Africa's e-waste management efforts. Since 2012, it has implemented a comprehensive circularity and Zero Waste to Landfill commitment
- **Tanzania** has drafted EPR guidelines (2021) and is conducting stakeholder consultations to operationalize producer obligations

OUR RESOURCES

**E-WASTE
TOOLKIT**

*Coming
soon!*

E-waste hierarchy



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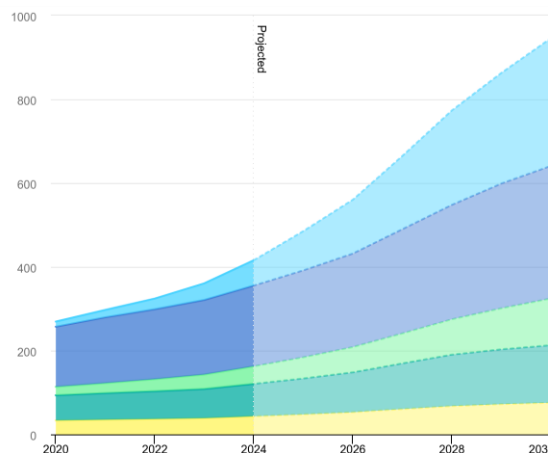
Green AI

FOCUS AREA

AI is a powerful but resource-intensive tool. While many countries have introduced national AI strategies, few account for energy considerations. Green AI refers to applications, policies, and practices to **build resource-efficient AI models and infrastructure** as well as **harness AI for climate and environmental use cases**.

OUR WORK

We support mainstreaming of resource considerations in AI policies, and in infrastructure and application investments. We also help countries leverage AI for green applications.



Data center electricity use is expected to grow by 15% per year from 2024 to 2030 (IEA)

COUNTRY CASE

- Support for Social Development in **Guinea** to develop an AI application to manage community-based climate risk assessments and related climate investments, including linkages with global climate data sets.
- Support for the **Kenya** Soil Health Challenge developing climate smart AI solutions, in partnership with Agriculture GP.
- Training for policy makers at the **Transform Africa Summit** on integrating resource considerations into AI

OUR RESOURCES

GREEN AI
POLICY
TOOLKIT

Coming
soon!



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Resilience and Sustainability in Implementation

Implementation Stage	Resilience Standards and Practices	Sustainability Standards and Practices
Feasibility / Technical Assessment Define specific resilience and sustainability outputs in RFP for the TA Technical/ feasibility assessment should analyze and propose tailored recommendations on green technical specifications (e.g. standards and best practices)	• Conduct site-specific climate risk assessments • Incorporate resilient route/site selection, redundancy, and business continuity measures • Integrate outage response and recovery requirements into SLAs • Apply resilient design principles to new and existing infrastructure • Use recognized standards and best practices such as: Uptime Institute Tier Standards • ANSI/BICSI 002 • ANSI/TIA-942	Energy & Efficiency: • Assess energy demand, grid stability, renewable energy potential, and energy-saving opportunities • Apply standards such as ISO 50001, ITU-T L.1310, ETSI TC EE, and IEEE 802.3az Renewable Energy: Integrate renewable and hybrid energy solutions guided by ITU-T L.1200/L.1382 E-waste: Apply circular economy and e-waste approaches (e.g., ITU-T L.1036) Data Centers: Use EDGE green data center certification and Energy-star certified IT equipment where feasible

Illustrative examples - non-exhaustive



Resilience and Sustainability in Procurement

Implementation Stage	Procurement and Contracting Measures
Feasibility / Technical Assessment	Define specific resilience and sustainability outputs in RFP for the TA Technical/ feasibility assessment should analyze and propose tailored recommendations on green technical specifications (e.g. standards and best practices)
Procurement Make green requirements enforceable	Develop specifications and tenders that mandate sustainability and resilience (how climate and energy risks are addressed) Reflect resilience, EE, RE, and e-waste in enforceable bidding documents covering specs, evaluation criteria, and contractual requirements/ obligations For example, include green performance metrics in the contract which can include reporting energy consumption, e-waste practices and reduction in downtime



Implementation support example: Republic of Congo



Climate risk analysis using geospatial tools to assess digital infrastructure vulnerability to climate hazards



Evaluate current resilience and green ICT policies, comparing against international best practices, and identifying priority gaps for strengthening regulatory frameworks



Green policy note on embedding climate objectives and recommendations into country's Green ICT Strategy



Institutional capacity building through stakeholder workshops, exercises on GIS mapping, and knowledge transfer on resiliency and sustainability principles



Key Takeaways



Digital infrastructure is **critical for development** but increasingly exposed to **climate risks** and rising energy demand



Resilience and sustainability measures in telecom networks and data centers help **protect infrastructure, reduce downtime and operating costs, improve service continuity, ease pressure on energy resources**



The **World Bank Group is mainstreaming resilience and sustainability** across digital operations through project design support, technical guidance, standards, procurement tools, and implementation support



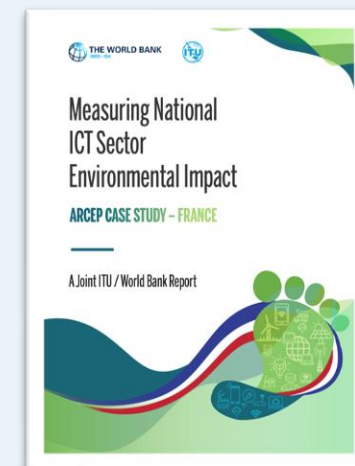
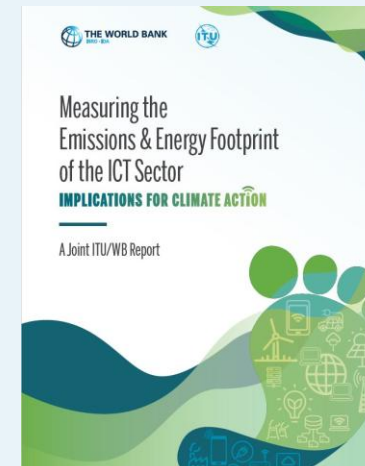
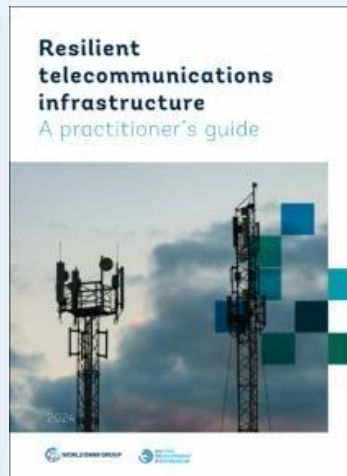
Sustainability and resilience should be integrated across the full **digital infrastructure lifecycle** - from **feasibility assessment** and technical design to **procurement and implementation**



Green technical specifications and **internationally recognized standards** help operationalize resilient and sustainable infrastructure investments



Thank You



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