AFRICA

The AR Initiative

SUSTAINABILITY MAGAZINE

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The Industry Insight: Acre Impact Capital

Enhancing Africa's Trade Networks through Sustainable infrastructure

Towards a Sustainable Research Model

Africa's Green Gold Rush

The AR Initiative

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The AR Initiative

LETTER FROM THE EDITOR

Dear Readers,

Africa is at a critical point. With the world's fastest-growing population and economies primed for transformation, we require an estimated $130-170 billion annually in infrastructure investment to meet the United Nations Sustainable Development Goals by 2030. Yet traditional financing mechanisms have consistently fallen short of addressing this colossal need, leaving a financing gap that threatens to undermine Africa's sustainable development trajectory.

This third issue of Africa Sustainability Magazine confronts this challenge head-on, examining how innovative financing instruments can unlock the capital necessary to build the infrastructure that will define Africa's future. Our cover story explores the transformative role of export credit agencies in de-risking investments and catalysing private sector participation in sustainable infrastructure projects across the continent. These institutions, often overlooked in mainstream discourse, represent a critical bridge between public policy objectives and commercial viability, precisely the kind of strategic intervention Africa requires.

The financing conundrum facing African infrastructure is more than a quantity issue; it's a quality, accessibility, and alignment with local contexts issue. Whilst international development finance institutions have provided valuable support, our infrastructure needs demand a more sophisticated ecosystem of funding sources. This includes leveraging domestic capital markets, diaspora resources, and innovative blended finance mechanisms that can transform risk-return profiles for investors whilst delivering tangible socio-economic benefits.

The articles in this issue collectively argue for a fundamental shift in how we approach infrastructure financing in Africa. Rather than relying on donor-driven models that often fail to achieve scale or sustainability, we must embrace innovative financing mechanisms that leverage their inherent strengths—youthful demographics, abundant natural resources, growing digital connectivity, and increasingly sophisticated capital markets.

The path forward requires bold thinking, strategic partnerships, and unwavering commitment to solutions that deliver both economic returns and social impact. The examples and insights presented in this issue demonstrate that such solutions are not only possible but already emerging across the continent.

Lolade Ajiboye-Richard

Editor-in-Chief, Africa Sustainability Magazine

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Advancing Sustainability: World Bank Supports Ghana's Forest and Biodiversity Goals.

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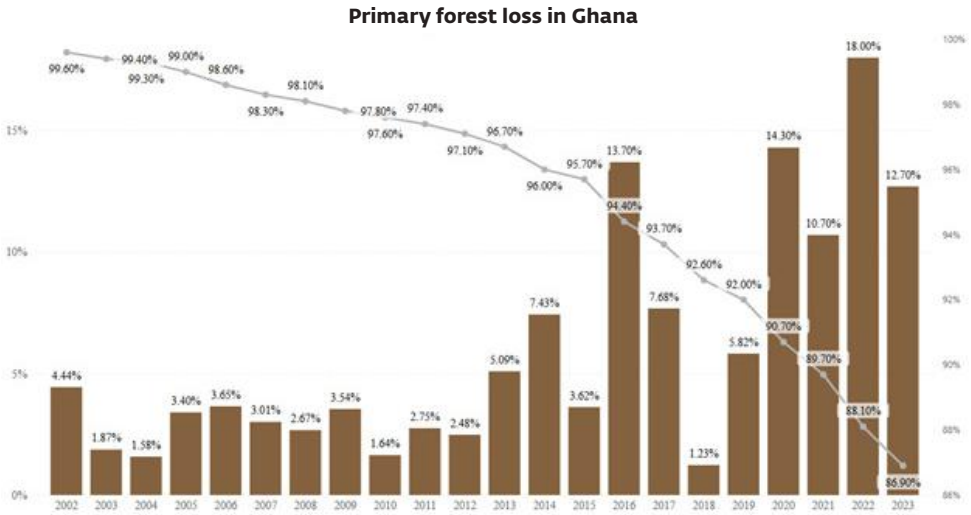
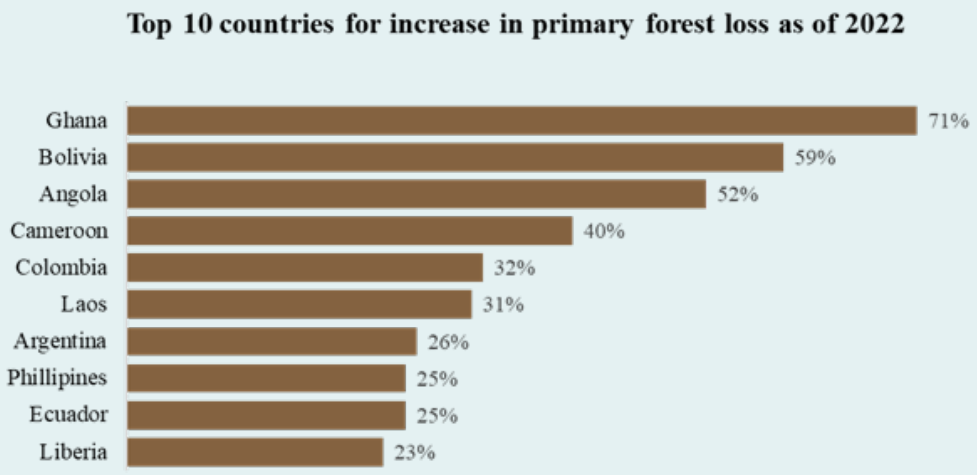
Every year, Ghana loses forest cover equivalent to the size of Greater London. The country's forests, rich in biodiversity and vital to ecological and economic stability, face unprecedented threats. In 2022, Ghana lost 18,000 hectares of humid primary forest, a staggering 68% increase from the previous year's 10,700 hectares, according to(Figure 1). This sharp rise highlights a concerning trend across West Africa, with Ghana now among the region's top countries experiencing rapid deforestation and loss of tree cover



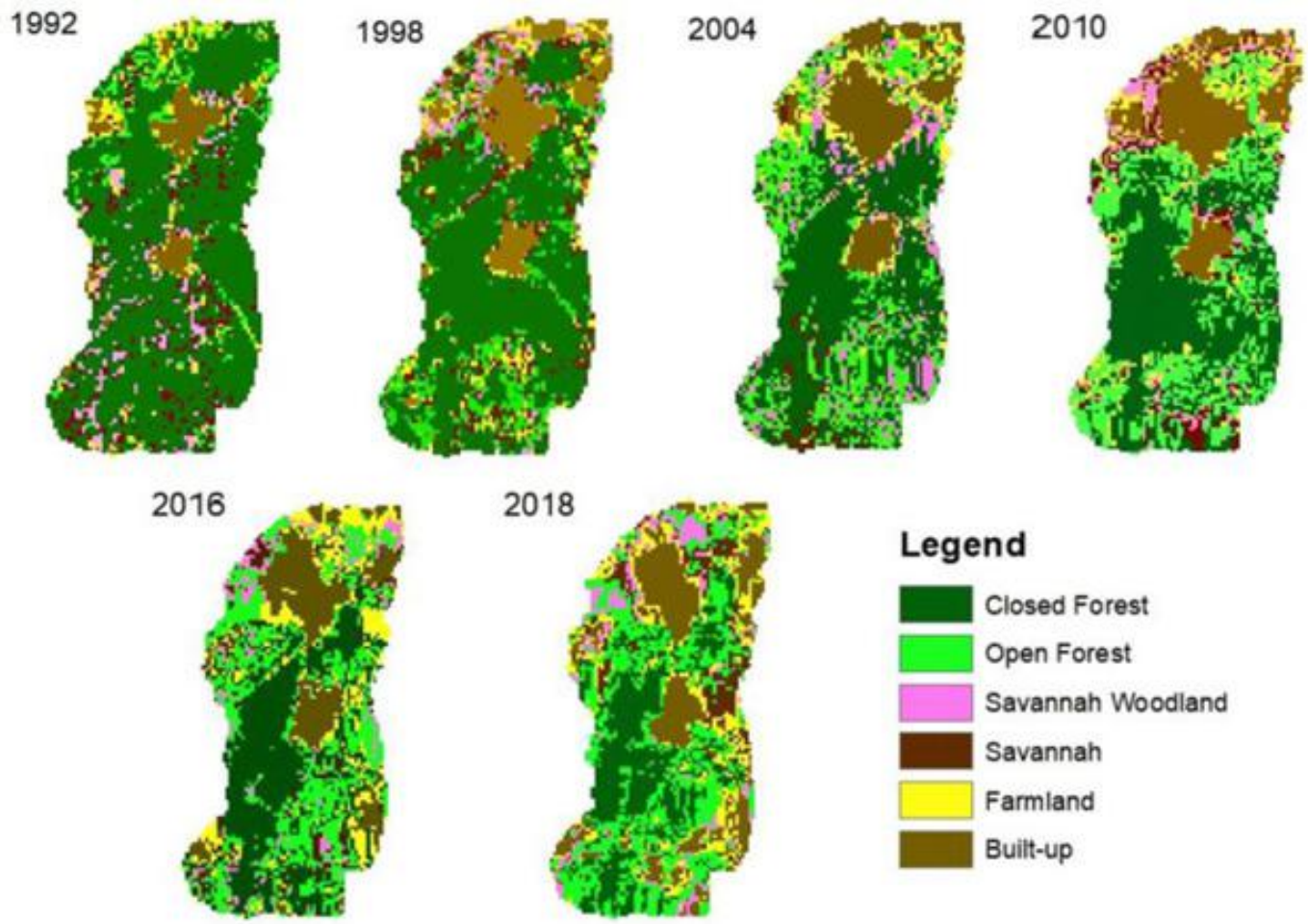


The Economic Cost of Environmental Degradation

Forests provide essential ecosystem services, including water regulation, carbon storage, and sustaining soil fertility, as well as supporting millions of rural livelihoods. Yet, deforestation is costing Ghana an estimated $400 million annually in lost ecosystem value . Unregulated land use, agricultural encroachment, and illegal artisanal mining, known locally as galamsey, continue to degrade these vital resources.

Recognising this growing crisis, the World Bank has renewed its commitment to supporting Ghana's forest sustainability efforts through the adoption of Natural Capital Accounting (NCA) . This innovative framework, supported by the Bank's Global Programme for Sustainability (GPS), enables Ghana to measure and assign economic value to natural assets, including forests, biodiversity, and ecosystem services. The aim is to embed environmental data into national decision-making and fiscal planning, ensuring long-term ecological and economic resilience .

The urgency of action was reinforced during the 2025 National Landscape Forum in Accra, themed "Natural Resource Management and Forest Economy for Inclusive Growth." The three-day event brought together policymakers, conservationists, and development partners to align on strategic interventions. Ms Naila Ahmed, the World Bank's Programme Leader for Sustainable Development in Ghana, Liberia, and Sierra Leone, called for robust, multi-stakeholder collaboration and emphasised that "the insights from this forum will drive Ghana towards more sustainable forest management practices, ensuring that natural resources contribute to long-term prosperity."



A focal point of the discussions was the escalation of illegal mining, which continues to devastate forests and pollute major water bodies. Professor Patrick Agbesinyale, Chief Director at the Ministry of Lands and Natural Resources, reaffirmed the government's strong stance against galamsey, citing the shutdown of illegal mining sites and increased community-based surveillance. Beyond enforcement, Ghana is scaling up its restoration commitments, setting an ambitious target to restore 2 million hectares by 2030 through reforestation, agroforestry, and responsible land-use planning .

Looking ahead, the Ghana–World Bank partnership is evolving to strike a balance between environmental protection and inclusive economic growth. Beyond forest conservation, the collaboration seeks to promote eco-tourism, expand green jobs, enforce responsible mining practices, and integrate landscape sustainability into national development policies.

Strategic Investment for Africa's Infrastructure: AfDB and Germany Sign €18.4M Agreement to Boost Project Preparation

The African Development Bank (AfDB) and Germany's state-owned development bank, KfW, have signed an €18.4 million financing agreement to support the NEPAD-Infrastructure Project Preparation Facility (NEPAD-IPPF) Special Fund . This latest contribution brings Germany's total support through KfW to $58.14 million, reinforcing a long-standing commitment to Africa's infrastructure transformation. Africa faces an annual infrastructure investment gap of over , a deficit that continues to constrain the continent's economic growth by an estimated each year. This new funding injection comes at a critical time, supporting the second Priority Action Plan (PIDA PAP2) under the Programme for Infrastructure Development in Africa, a framework that aims to deliver transformative regional infrastructure by 2030. NEPAD-IPPF plays a pivotal role in ensuring that large-scale regional infrastructure projects are not only technically and financially prepared but also investment-ready and climate-resilient. The fund bridges the gap between project ideas and bankable proposals, accelerating development across various sectors, including transportation, energy, water, and digital connectivity. The agreement, which was signed in Abidjan, Côte d'Ivoire, by Christoph Tiskens, KfW's Director for Eastern Africa and the African Union, and Mike Salawou, AfDB's Director for Infrastructure and Urban Development, follows Germany's 2024 announcement to support the African continent's infrastructure development. Tiskens praised the achievements of NEPAD-IPPF, noting its significant progress in advancing regional infrastructure projects throughout Africa. He emphasised that the replenishment aims to focus on critical areas such as climate change, gender, Agenda 2063, and the African Continental Free Trade Area (AfCFTA), while aligning efforts to meet the Sustainable Development Goals (SDGs).

Mike Salawou highlighted the significance of the replenishment, noting that it will enable NEPAD-IPPF to enhance its capacity and accelerate project preparation for transformational, cross-border projects that are crucial for regional integration, economic growth, and climate adaptation. He also emphasised the significance of AfCFTA in promoting intra-African trade, which will be facilitated by enhanced infrastructure.

Key Focus Areas of the Replenishment

The funding will particularly focus on:

- **Climate-smart infrastructure** to ensure resilience against climate change.
- **Advancing gender inclusivity** and supporting social impact in infrastructure projects.
- **Promoting regional trade integration** under AfCFTA.
- **Aligning projects with Agenda 2063,** Africa's blueprint for economic and social transformation.

The partnership between the AfDB and Germany's KFW demonstrates a commitment to building Africa's infrastructure capacity and accelerating economic growth through strategic investment. This agreement should drive industrial and regional trade integration whilst laying the foundation for the continent's long-term development.

EU Unveils €4.7 Billion Investment in South Africa for Clean Energy, Trade, and Infrastructure

In a move to support Africa's green transition, the European Union (EU) has unveiled a €4.7 billion investment package for South Africa, marking the launch of a Clean Trade and Investment Partnership . This initiative, presented by European Commission President Ursula von der Leyen at the EU-South Africa Summit in Cape Town, positions South Africa as a key partner to enter a next-generation EU trade agreement focused on clean energy, strategic industries, and critical raw materials.

Investment Breakdown

The €4.7 billion investment package is spread across three primary sectors: Clean Energy, Connectivity Infrastructure, and Healthcare. This multi-faceted investment is designed to strengthen South Africa's position as a leader in the green transition, whilst also providing a much-needed boost to the local economy.

Clean Energy (€4.4 billion): The majority of the investment will target renewable energy sources, including solar, wind, green hydrogen, and battery production. This is part of the Just Energy Transition Partnership (JETP), which aims to accelerate the shift from fossil fuels to renewable energy in South Africa.

Connectivity Infrastructure: Focused on upgrading vital transport and communication links, the EU investment includes improvements to the Lubumbashi-Durban corridor, as well as a nationwide expansion of fibre optic networks and the roll-out of 5G capabilities.

Health Sector (€700 million): The EU will support South Africa's health sector by investing in local pharmaceutical production, with an emphasis on enhancing vaccine and medicine manufacturing capabilities.

This investment package aligns with the EU's Scaling Up Renewables in Africa initiative, supporting global climate commitments ahead of the upcoming G20 Summit in Johannesburg. As a cornerstone of the EU's global green agenda, this initiative promises to stimulate economic growth, create jobs, and solidify South Africa's role in the global clean energy and trade sectors.

Gwendolyn Zorn
Head of Impact, Acre Impact Capital

Industry Insight:

The $3 Trillion Opportunity: Acre Impact Capital's Mission to Transform Infrastructure Financing in Africa

Africa faces a critical infrastructure deficit that threatens its sustainable development trajectory. With an annual financing gap of over $100 billion and climate change intensifying infrastructure needs, traditional funding mechanisms are proving inadequate. In this exclusive interview, Gwendolyn Zorn, Head of Impact at Acre Impact Capital, shares insights on how innovative financing models are bridging this gap through export credit agencies, pioneering new pathways to fund essential climate-aligned infrastructure across the continent.

LABAKE AJIBOYE-RICHARD
Principal Consultant at the AR Initiative.

The Infrastructure Challenge: A Continental Crisis

Africa's infrastructure deficit represents one of the most pressing obstacles to sustainable development on the continent. The African Development Bank estimates an annual financing gap of around $100 billion, with sustainable infrastructure needs becoming increasingly urgent as climate change accelerates. This shortfall manifests across critical sectors: only 48% of Africans have access to electricity, whilst water and sanitation infrastructure reach just 70% of the population. Transport networks remain fragmented, with many rural areas effectively cut off from economic opportunities. The challenge extends beyond mere quantity to quality and sustainability. Much of Africa's existing infrastructure was built without climate resilience in mind, making it vulnerable to increasingly frequent extreme weather events. The continent requires not just more infrastructure, but fundamentally different approaches that integrate environmental sustainability, social inclusion and economic viability.

Traditional financing mechanisms have struggled to meet this demand. Development finance institutions, despite their crucial role, are unable to meet the scale of Africa's infrastructure needs. Commercial banks often shy away from long-term infrastructure investments, particularly in perceived high-risk African markets. Sovereign borrowing capacity remains constrained by debt sustainability concerns, with many countries already spending more on debt servicing than on development priorities. Enter export credit agencies (ECAs), which are government-backed institutions that facilitate international trade through guarantees and financing. With global exposure of $3.1 trillion, ECAs represent a massive yet underutilised resource for sustainable development. A critical market failure, however, has prevented this capital from flowing efficiently to African infrastructure: the chronic underfunding of the 15% commercial tranche that ECAs cannot cover under international agreements.

This is where Gwendolyn Zorn and Acre Impact Capital have identified a transformative opportunity.

Bridging the Gap: A New Approach to Infrastructure Finance

How does Acre Impact Capital's approach to sustainable infrastructure financing complement or differ from other major players in the African investment landscape, particularly traditional DFIs and commercial banks?

We see ourselves in a market-shaping role that brings intentionality for impact into the export finance industry, Zorn

starts. "This is already a highly impactful industry; the funds they commit and guarantees they use to enable commercial banks are incredibly impactful in themselves. Many of these projects are water infrastructure in hard-to-reach areas, and hospitals in places that currently don't have them. There's a tremendous impact already happening, but it was a happy byproduct rather than the primary purpose."

"What we're trying to do is bring intentionality for impact to the forefront of the export finance industry," she continues. "If you invest with intention, you're not only going to achieve your traditional mandate of promoting exports and trade facilitation, but you can also achieve a positive impact. These things don't need to be a trade-off. Often, when you tell people, 'let's do impact investing,' they think that means foregoing commerciality, but that's definitely not the case. That's the key differentiator for us, bringing this conversation to this industry in particular."

What makes Acre unique is that it is the first fund in the world dedicated to funding the commercial tranche of ECA transactions. "We really are shifting the market to enable these projects to be financed, so our 15% unlocks the 85%," Zorn notes. "That's a catalytic effect of 5.6 times, and it's the cheapest form of finance for African governments – cheaper than bonds, obviously cheaper than fiscal spending, and cheaper than commercial debt. Export finance as a source of debt for sovereign borrowers in Africa is cheaper than the capital markets, by 20-30% on average."

Investment Strategy: Essential Infrastructure for Underserved Communities

How are Acre's investment themes of renewable power, health, food and water scarcity, green transportation, and sustainable cities shaping the broader African infrastructure financing landscape?

"Our mandate is to invest in essential climate-aligned infrastructure for underserved populations," Zorn explains. " Our themes all converge under this idea that we are only doing essential infrastructure." The fund's selectivity is deliberate: "It should be climate-aligned and benefit underserved populations." With a $2 billion pipeline and a current fund size of $100 million, Acre can be highly selective in its investments. "The potential is there, but because we are then applying that sort of intentionality, we can almost pick and choose the projects that we think most fit with our impact objectives," says Zorn. "We can invest in sectors that commercial banks typically wouldn't invest in, things that are not revenue-generating or don't have a tariff attached. Water and sanitation infrastructure, free public hospitals; these are sectors not suited to traditional project finance because they are not revenue-generating."

This capability stems from Acre's model of lending to governments rather than requiring revenue-generating projects. "It's public sector projects that wouldn't typically be financed by the private sector," Zorn clarifies. "We are helping to expand the gamut of projects because of this ECA blending structure that makes it more affordable. Since these are African government borrowers, projects don't necessarily need to be revenue-generating to have cash flows to pay back debt; it can come out of the government budget." The fund's investment themes align with market demand and development priorities. "These are key sectors for development outcomes on the continent, and the market confirms this because you're seeing huge amounts of allocations to renewable energy, for example, that's true for both borrowers and investors," Zorn notes. "Under green transport, we can look at railway, road, and bridge projects, for example, but only where there is a clear emission reduction angle from the baseline. In this way, we're helping to allocate finance to projects with a value add, rather than the status quo." This market validation demonstrates that Acre's thematic focus addresses both investor appetite and genuine development needs across the continent.

Addressing Market Gaps: The Underserved Sectors and Regions

From your vantage point in the market, which regions or sectors are most underserved by current infrastructure financing?

"Non-revenue-generating sectors tend to be underfinanced," Zorn responds directly. "If you have a government that wants to do water infrastructure and they're doing an export finance type deal, and there's no one with the appetite to fund the 15%, the project doesn't go ahead. Whereas with other sectors, you can source alternative financing, traditional project finance, because it has revenues, PPPs, and so forth. With some of these other projects, you simply can't do that." To understand the funding challenge, it's essential to grasp how ECA financing works. Under OECD arrangements, export credit agencies can only guarantee up to 85% of a project's value, leaving a 15% commercial tranche that requires direct investment, often in African sovereign risk that many investors avoid.

Despite growing global interest in African infrastructure, evidenced by China's Belt and Road Initiative and the EU's Global Gateway, which allocates $150 billion to Africa alone, a fundamental bottleneck remains. "Certainly, having things like Global Gateway and Belt and Road is definitely helping Africa," Zorn acknowledges, "but if you don't have anyone willing to finance the 15%, the ECA transaction can't go ahead." The underfunding stems from multiple structural barriers. "There's limited exposure that banks can take due to Basel regulations, which limit how much risk exposure they can have and what countries they can put their money into," she explains. "Secondly, you could try and get insurance for that, but the insurance appetite is quite stretched. There is little appetite to give insurance on those pieces." Geographically, "the regions that are most underserved are those that don't have a track record of eurobonds or financing. You have African countries that don't have a great track record, and therefore, what historical

data can you use to price the risk? These kinds of countries tend to be avoided because the risk can't be calculated."

She further emphasises four key considerations for structuring sustainable infrastructure finance: "Avoiding over-indebtedness of the sovereigns, that's not something anyone wants. Good analysis of affordability and debt capacity within the sovereign is crucial. Cheaper finance is needed, and that's where this export finance model is hugely beneficial because it is the cheapest form of finance given that blended structure. We also need more local-denominated debt and longer tenors." Recent progress includes extended tenors up to 22 years for climate projects introduced in late 2023. However, Zorn notes this hasn't been applied to social projects like hospitals, highlighting a concerning disparity between climate and social infrastructure priorities.

De-risking Infrastructure: The ECA Advantage and Market Transformation
What role do you see export credit agencies playing in de-risking sustainable infrastructure investments across Africa, and how is Acre helping to establish these models for wider adoption?

"The role that ECAs play in de-risking investments is crucial," Zorn emphasises, returning to the scale of opportunity. "Given the Sustainable Development Goals (SDG) financing gap is sitting at $4 to $4.3 trillion, why would you not include a $3 trillion potential into the SDG conversation intentionally? I think the ECAs are starting to wake up to that." The mechanism is straightforward but powerful: "The role that the ECA plays is to give the guarantee. Their function is absolutely crucial to making these projects affordable, because the exposure is to the UK, US, Norway, Sweden, and that makes the commercial financing that is then put into that blended structure much more affordable."

Acre's market-shaping efforts extend far beyond individual transactions. "We're participating actively in impact frontiers working groups, working with the Global Impact Investing Network (GIIN), attending conferences around impact investing and bringing ECAs into the conversation," Zorn explains. The fund has also produced substantial thought leadership, including a white paper on leveraging ECA finance for impact investing commissioned by the International Chamber of Commerce. "The ECAs I've spoken to have ESG departments, but they don't have impact departments," Zorn observes, highlighting the industry's nascent approach to intentional development outcomes. Perhaps most significantly, Acre is establishing new standards for impact measurement and management. "We have an Impact Measurement and Management (IMM) system aligned to best practices using impact frontiers and GIIN's Iris Plus metrics," she explains. "We will go into a deal and share the data with our deal partners, saying 'this is what we found in terms of impacts achieved and outcomes beyond simply outputs like jobs and revenues.' We really dig into the 'so what' of those things."

This rigorous approach resonates across the industry. "All the ones we've spoken to love this, especially on an individual level because when you're a banker doing these investments, you don't always get this data, and as a person, you want to know that your work is having a positive impact," Zorn notes. By demonstrating that comprehensive impact measurement is both possible and valuable, Acre is setting new expectations for the entire export finance ecosystem. And of course, that impact is valuable in itself, because it means real change for real people. Accurately understanding the key levers of change helps refine future investment strategies and ensure the effectiveness and efficiency of impact investments.

Looking Forward: Sustainable Finance as the New Paradigm

What shifts in the African investment landscape would be most crucial for accelerating sustainable infrastructure financing over the next decade?

"The key question is how to increase sustainable finance," Zorn emphasises. "That intentionality for impact is so key, and for people to start realising that you can be commercially-motivated and impact-motivated, those things do not conflict with each other; in many cases, they complement and reinforce each other." She advocates for structural changes in financing terms: "The tenors are actually the crucial piece that makes financing more affordable. Increasing the coverage ratio doesn't necessarily make it more affordable for sovereigns." Extended tenors of up to 22 years for climate projects, introduced in the OECD arrangement in late 2023, represent progress, though Zorn notes this hasn't been applied to social projects. "These tenors, she emphasised, and reduced premiums have improved debt affordability for African sovereigns by 25%. If the OECD agreed that social projects, like schools and hospitals, should benefit from the same terms as climate change projects, affordability would improve further to c.37%."

Beyond international financing, Zorn emphasises domestic solutions: "You don't always necessarily need to look abroad for financing. Careful management of the fiscus, good governance and addressing illicit financial flows are crucial to mobilising domestic resources. Illicit financial flows amount to just under 4% of Africa's GDP – about $88b per year – almost half of what is needed on an annual basis to meet the SDG targets, according to an UNCTAD report."

Zorn, throughout our interview, maintains the clear conviction that sustainable infrastructure financing requires intentionality, better measurement, and recognition that commercial and impact objectives can be mutually reinforcing. Through this pioneering approach, Acre Impact Capital is working to mainstream impact considerations into the export finance industry and set a high precedent for future replications of their debt fund model.

Op-Ed:

Africa's Green Gold Rush: Demystifying Climate Finance and Carbon Credits for Sustainable Development

► **DR. ADEBOLA ODUNSI**
(Dr. ESG), CEO of Carbonivity

Imagine a continent with 65% of the world's uncultivated arable land, 30% of its mineral reserves, and a youthful population set to double by 2050. Yet, Africa accounts for less than 2% of global carbon credit projects[1]. This stark disparity is a wake-up call for Africa to move from being a bystander to leading the climate finance revolution. In Nigeria, where 85 million lack electricity[2], and Kenya, where drought threatens 80% of its agriculture-dependent economy[3], carbon markets offer more than revenue—they offer resilience.

Climate finance and carbon credits are not mere buzzwords; they are Africa's untapped lifeline for sustainable development. By demystifying these concepts and addressing funding apathy, the continent can unlock green revenues, solve developmental challenges, and position itself as a global climate leader. From Nigeria's clean cookstove initiatives to Kenya's pioneering wind farms, the blueprint for success exists—now is the time to scale.

Demystifying Carbon Credits: Currency for a Greener Future

Carbon credits are Africa's "green gold." Each credit represents one tonne of CO_2 reduced or removed through projects like reforestation, renewable energy, or sustainable agriculture. These credits are traded globally, allowing corporations to offset emissions while channelling funds to eco-projects.

Take Nigeria, where 120 million people rely on firewood for cooking[4]. By distributing 80 million energy-efficient clean cookstoves and planting 4 billion economic trees—a project championed by GreenPlinth Africa and supported by the Office of the Vice President, the Lagos State Government, and Carbonivity is advancing large-scale household emissions reductions, the fight against deforestation, and generating high-fidelity Article 6-compliant carbon credits. As the world's largest Paris Agreement Crediting Mechanism (Article 6) compliant clean cooking initiative, each 15L stove saves 15.4 tonnes of CO_2e annually[5], translating to billions in revenue and dividends for its most vulnerable communities. Similarly, Kenya's Lake Turkana Wind Power Project, Africa's largest wind farm, prevents 1.6 million tonnes of CO_2 yearly[6] while powering 1 million homes. Such initiatives prove carbon credits

are not abstract—they're engines of grassroots impact.

Yet, climate literacy remains low. Many still view carbon markets as opaque or exclusive. The truth? Every sector—from agriculture to tech—can participate. A Ugandan coffee cooperative adopting agroforestry earns credits; a Nigerian startup installing solar mini-grids reduces emissions and poverty.

Funding Apathy: Bridging the Climate Finance Gap

Africa receives just 3% of global climate finance[7], despite being disproportionately impacted by climate change. This gap isn't just unjust—it's irrational. The continent's vast natural capital and low-carbon potential make it a prime investment frontier. Carbon credits offer a solution: they de-risk green projects by creating revenue streams beyond traditional aid or debt.

In Nigeria, where 40% of forests have been lost since 2000[8], Carbonivity partners with development commissions to implement UNFCCC-certified afforestation projects. These initiatives restore ecosystems, create jobs, and generate Certified Emissions Reduction (CER) credits for global buyers. Meanwhile, Kenya's Kasigau Corridor REDD+ project—a landmark carbon offset scheme—protects 500,000 acres of forest, safeguards wildlife, and channels $3 million annually to local schools and clinics[9].

Consider this: the global Paris Agreement Crediting Mechanism (PACM)-driven carbon market could exceed $1 trillion by 2030. For perspective, that's nearly quadruple the GDP of Kenya. Yet, hesitation persists. Critics cite project complexities or concerns about greenwashing, but frameworks like the UNFCCC's Article 6.2, 6.4ER and 6.8 ensure transparency and standardisation. The real risk? Inaction. Organisations that delay engagement today will face higher costs tomorrow—or miss the boat entirely.

For Businesses: Start small—audit emissions, pilot a solar project. Carbonivity's Lagos and Nairobi hubs offer workshops to demystify carbon markets.

For Investors: Redirect capital to high-impact sectors. The African Development Bank estimates a $3 trillion climate investment opportunity by 2030.

Africa stands at a crossroads. Climate finance isn't a distant ideal—it's today's toolkit for infrastructure, jobs, and resilience. Yes, risks exist, but as the proverb warns, "Only those who do not plant seeds will never see a harvest."

Carbonivity's mission is clear: to ensure Africa doesn't just participate in the carbon revolution but leads it. The question isn't "Can we afford to act?" It's "Can we afford not to?"

The time to plant is now!

Carbonivity: Charting Africa's Profitable Green Pathway

At Carbonivity, we bridge the knowledge-action divide. As a Carbon Asset Management Entity, we design UNFCCC-certified projects providing end-to-end solutions including: Carbon Footprint Audits: Pinpointing emission hotspots.

Carbon Footprint Audits: Pinpointing emission hotspots.

Decarbonisation Strategies: Tailored roadmaps for net-zero transitions.

Certified Emissions Reduction (CER) Credits: Monetising sustainability through verified offsets.

We are partnered with the Lagos State Office of Climate Change and Circular Economy, Nigeria, North East Development Commission, sub-Saharan Africa's largest bank by customer base, Access Bank, the UK Carbon Registry, Dutch, German and Danish Foreign Missions in Nigeria, among other leading private and public organisations. Through partnerships and knowledge transfer, we empower businesses to turn climate compliance into a competitive advantage.

The Call to Action: Unlearn, Relearn, Act

Africa's climate revolution demands collective unlearning. Old paradigms of "development versus sustainability" are obsolete. The new truth? Green growth is profitable growth.

For Policymakers: Follow Kenya's lead, where renewable energy contributes 90% of electricity10, or Nigeria's carbon tax incentives for green startups.

About Carbonivity

Carbonivity is a Climate Asset Management Entity (CAME) driving Africa's profitable green transition. We specialise in ESG compliance, circular economy optimisation, and UNFCCC-certified carbon offset projects. By transforming climate action into economic opportunity, we empower businesses in Nigeria, Kenya, and beyond to thrive sustainably.

Join the revolution: visit www.carbonivity.com

Partner:

Sustainable Infrastructure & Domestic Capital Mobilisation

Imagine a Continent where roads withstand relentless floods, where every home hums with reliable, clean energy, and where digital access connects millions to new opportunities. This vision is not a distant dream; it is a necessity. Africa's infrastructure deficit, long a barrier to growth, demands a bold new approach. The continent requires $68–$108 billion annually to pave its roads, power its cities, and provide clean water, according to the African Development Bank ("AfDB"). However, this challenge is not solely about building more—it is about building smarter. As climate change intensifies, consider flooding in Lagos, droughts in the Sahel, or cyclones in southern Africa; sustainable, climate-resilient infrastructure is critical. The solution cannot rely on foreign handouts. Africa's future lies in mobilising its own capital—pension funds, insurance assets, sovereign wealth funds, and capital markets—to finance a green, resilient tomorrow. In Nigeria, particularly Lagos, this transformation is essential. How can domestic capital bridge Africa's infrastructure gap, drawing lessons from global leaders and spotlighting Nigeria's economic powerhouse?

The Infrastructure Crisis: Beyond a Funding Gap

Africa's infrastructure deficits are profound. Only 38% of its roads are paved, stranding millions during rainy seasons. Approximately 600 million people, or 43% of the continent's population, lack access to electricity, while 400 million go without clean water. Digital connectivity lags, with just 28% of Africans accessing broadband, compared to 80% in

developed nations. These gaps hinder economic progress, shaving 2– 3% off Sub-Saharan Africa's GDP each year. Beyond scale, the challenge demands sustainability. Conventional infrastructure, such as coal plants or unplanned urban sprawl, locks nations into high-carbon pathways, worsening climate vulnerabilities like floods and droughts.

In Lagos, Nigeria's commercial epicentre, these issues are acute. Annual floods inflict about $2.5 billion in damages and lost productivity, submerging homes and businesses. Unreliable power, delivering just 3,000 megawatts for 25 million residents, stifles economic activity. Yet, Lagos exemplifies Africa's broader imperative: infrastructure must address immediate needs while withstanding climate shocks and serving future generations. This calls for solar-powered grids, flood-resistant drainage systems, and low-carbon transport solutions, such as electric buses and rail systems. Lagos is pioneering such efforts with its Blue Line and Red Line rail projects. The Blue Line, operational since September 2023, spans 13 kilometres from Marina to Mile 2, serving approximately 20,000 passengers daily and reducing CO_2 emissions by approximately 50,000 tons annually by cutting 5,000–7,000 car trips. The Red Line, launched in February 2024, covers 37 kilometres, transporting 15,000 passengers daily and easing traffic by 10–15% along its corridor. Both electrified lines, managed by the Lagos Metropolitan Area Transport Authority, signal a shift toward sustainable mobility, with plans for a Green Line to further expand low-carbon transport options.

The critical question remains: Who will finance these transformative projects? Historically, Africa has leaned on public budgets and foreign aid. Public funds cover 80% of energy infrastructure spending, but official development assistance dropped by 3.5% to $204 billion in 2022. Foreign direct investment, while significant, often prioritises donor agendas over local needs. The answer lies within Africa's own resources: domestic capital.

The Power of Domestic Capital

Relying on local resources is practical and empowering. Domestic capital reduces debt burdens from external loans, aligns investments with local priorities, and builds resilient economies. Nigeria holds immense potential: its pension funds, managing ₦23.328 trillion ($16.2 billion) as of March 2025, could transform the country's infrastructure if unleashed. The Nigerian Sovereign Investment Authority, with $2.5 billion in assets, has already delivered projects like the Second Niger Bridge, proving that local funds can drive progress. Capital markets are stepping up, with Nigeria issuing Africa's

first sovereign green bond of ₦10.69 billion ($30 million) in 2017, followed by a ₦15 billion ($42 million) bond in 2019, which funds renewable energy and afforestation. In Lagos, banks like Access Bank have led the way, issuing a ₦15 billion ($41.4 million) green bond in 2019 and a $50 million green bond in 2022 to support coastal flood defences and solar facilities.

Yet, challenges persist. Regulations limit pension funds to just a 7% allocation for infrastructure, compared to 20% in Canada. A shift to 15% could unlock ₦3.5 trillion ($2.4 billion), enough to power Lagos's Bus Rapid Transit system or build resilient water networks. Perceived risks—long project timelines and policy uncertainty deter investors, with only 10% of African infrastructure projects reaching financial close due to weak preparation. Limited expertise in assessing climate-focused investments further slows progress. Nigeria's green bond market, while pioneering, remains small, with Africa's total issuance at $4.9 billion compared to the European Union's €200 billion in 2023.

Domestic capital offers more than funding; it offers sovereignty. By tapping pension funds, insurance assets worth $300 billion across Africa, and sovereign wealth funds, Nigeria can reduce its reliance on foreign loans, which fell to $204 billion in 2022. Lagos, as Nigeria's financial hub, is poised to lead, channelling local savings into projects that create jobs, expand clean energy, and build resilient cities. With the right policies and tools, domestic capital can write Africa's sustainable future.

Global Lessons for Africa

To unlock domestic capital for sustainable infrastructure, Africa, and Nigeria in particular, can draw inspiration from nations that have successfully aligned their financial systems with green goals. From the United Kingdom's innovative risk-sharing models to Singapore's policy incentives, global leaders offer practical lessons that Nigeria can adapt to transform Lagos into a beacon of climate-resilient development. These examples highlight three key pillars: clear policies, risk-mitigation tools, and capacity building.

The United Kingdom provides a compelling model. Between 2012 and 2017, its Green Investment Bank mobilised £12 billion for renewable energy projects, such as offshore wind farms, by using public funds to reduce risks for private investors. Pension funds, such as the National Employment Savings Trust, allocate 15% of their £30 billion portfolio to green assets, a stark contrast to Nigeria's 7% allocation from its pension funds. The UK's success hinges on clear regulations and guarantees that make infrastructure investments attractive. Nigeria could establish a similar green investment fund, perhaps through the Nigerian Sovereign Investment Authority, to channel pension funds into solar grids or electric bus systems in Lagos, thereby de-risking projects for private capital.

Canada offers another lesson in scale. Its pension funds, managing $400 billion, invest 20% in infrastructure, including renewable energy and high-speed rail. The Canada Pension Plan Investment Board benefits

from a clear green taxonomy, a framework defining what qualifies as sustainable, ensuring investments align with climate goals. In Nigeria, where only 10% of infrastructure projects
reach financial close due to weak preparation, a national green taxonomy could guide pension funds and insurance firms, managing $300 billion across Africa, to confidently invest in projects like Lagos's waste-to-energy plants. Such a framework, tailored to Nigeria's context, would clarify risks and rewards, unlocking billions for sustainable development.

Germany's green bond market, comprising 10% of its €2 trillion bond total, demonstrates the power of market-driven solutions. Germany ensures transparency, attracting investors to green projects. Nigeria could adopt similar ESG standards, building on its sustainability reporting guidelines introduced in 2021. This would encourage banks like Access Bank, which issued a $50 million green bond in 2022 and a ₦15 billion green bond in 2019, to scale up sustainable finance, funding flood defences or solar facilities in Lagos.

Solutions for Nigeria and Beyond

How can Nigeria and Africa translate potential into action? First, expand green investment vehicles. South Africa's green bond market, raising $1 billion by 2021, sets a benchmark. Carbon markets, under the Africa Carbon Markets Initiative, could yield $1 billion annually for Nigeria by monetising emissions reductions from forestry and renewable projects. Blended finance, which combines public and donor funds to de-risk private investment, has proven to be effective. The African Development Bank's Sustainable Energy Fund for Africa has mobilised $500 million for renewables, powering mini-grids in Nigeria's rural communities.

Second, fortify regulatory frameworks. A Nigeria-specific green taxonomy, aligned with the European Union's standards, would define sustainable investments, enhancing investor confidence. The Securities and Exchange Commission's Sustainable Finance Principles mandate that sustainability disclosures should be done on all platforms where companies list their securities However, enforcement lags; imposing penalties for non-compliance, as suggested by industry experts, would ensure accountability, and align markets with sustainability goals, following Germany's model of mandatory ESG reporting.

Third, deepen capacity and awareness. The Financial Centre for Sustainability, Lagos, leads this charge, training financial institutions to structure green projects and raising awareness through its Fireside Chat Series, engagement with relevant stakeholders, and other advocacy campaigns. Scaling these efforts nationwide, alongside public-private partnerships modelled on the United Kingdom's, could prepare more projects for investment. For instance, training programs in Abuja and Kano could equip local banks to finance sustainable infrastructure, from rail to solar plants.

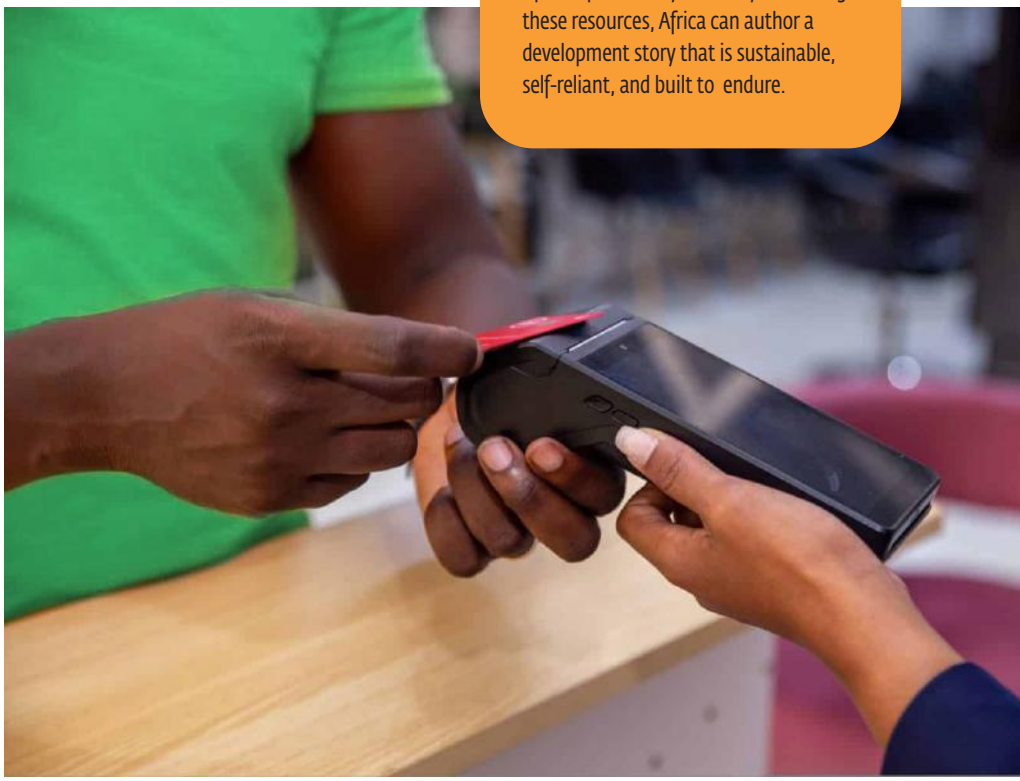
Finally, strengthen project pipelines across Nigeria. A project preparation facility, such as the African Development Bank's Africa Infrastructure Development Facility, could increase financial close rates to 30%, unlocking billions. Beyond Lagos's Blue and Red Line rail projects, which reduce CO_2 emissions by cutting car trips, Nigeria's sustainable infrastructure includes Abuja's Light Rail, serving 20,000 passengers daily, and Kano's 150 MW solar project. These initiatives, from urban transport to rural electrification, demonstrate Nigeria's potential to lead Africa's green transformation with domestic capital.

A Vision for Africa's Green Future

Africa's infrastructure journey transcends mere gap-filling—it weaves a future that is green, inclusive, and resilient. Sustainable infrastructure promises to create jobs, with renewable energy alone poised to employ 4 million Africans by 2030, according to the International Renewable Energy Agency. It expands access to clean energy, powering homes and businesses, and transforms cities like Lagos into vibrant, liveable hubs. By harnessing domestic capital, Africa can steer its own destiny, reducing dependence on external aid, which fell to $204 billion in 2022, as reported by the OECD. Local resources—pension funds, insurance assets, and capital markets—hold the key to a sovereign, sustainable tomorrow.

In Lagos, Nigeria's economic heart, this vision is taking root. Solar mini-grids are lighting up communities, while plans for electric Bus Rapid Transit systems aim to curb emissions, as outlined in Lagos's Climate Action Plan targeting net-zero by 2050. These initiatives, though in early stages, signal a bold ambition to redefine urban Africa. The Financial Centre for Sustainability, Lagos (FC4SL), stands at the forefront, uniting regulators, investors, and policymakers through dialogues. By fostering green finance frameworks, FC4SL catalyses investments in projects that combat flooding and power shortages, setting a model for the continent.

Global partners, such as the African Development Bank, World Bank, and Climate Bonds Initiative, offer technical expertise and concessional funds to bolster these efforts. The African Development Bank has committed $3.8 billion to 47 green projects, while the Climate Bonds Initiative supports Nigeria's green bond market. Yet, the true power lies within Africa's financial systems. By mobilising these resources, Africa can author a development story that is sustainable, self-reliant, and built to endure.



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Op-Ed:

Towards a Sustainable Research Model for Maximum Impact in **Africa's Health** and **Engineering Sectors**

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Africa has a growing population with a myriad of socio-economic and health issues, such as unemployment and a high burden of communicable and non-communicable diseases. Any strategy to address these challenges must be African-led, transdisciplinary, contextually relevant and sustainable. To this end, the role of research in addressing these challenges is critical.

In recent years, Africa's engineering and health sciences research landscape has experienced significant growth, aligning increasingly with global development agendas. From point-of-care diagnostics and biomedical devices to clean energy systems powering health infrastructure, researchers across the continent are generating innovations that directly address Africa's complex health and development needs. Initiatives such as the 10-year Regional Initiative in Science and Education (RISE), the African Institute for Mathematical Sciences (AIMS), and regional hubs like the African University of Science and Technology (AUST) have significantly increased the number of PhD holders many of whom are now engaged in interdisciplinary research grounded in local realities.

Countries such as South Africa, Egypt, Nigeria, Kenya, and Morocco continue to lead in engineering and health research outputs. For example, African researchers publish over 9,000 engineering-related papers annually, while health research publications have seen a similar surge due to programs such as H3Africa, EDCTP, and the Africa CDC-led efforts. Importantly, citation metrics indicate that Africa's engineering and health science publications gravitate towards matching global averages in emerging fields such as biomedical engineering, wearable technologies, and mobile health.

Despite this progress, the impact of research for health engineering remains constrained by systemic barriers. These include underfunded research ecosystems, fragmented agendas, low commercialisation rates, limited interdisciplinary collaboration, and a persistent brain drain. Intra-African collaboration is particularly weak in health technology development, and most translational research continues to rely heavily on Global North partnerships. While important, these partnerships often do not centre African priorities, further underlining the need for a homegrown, sustainable research model that leverages the continent's unique strengths.

This article proposes a roadmap for building such a model—one that positions Africa's engineering and health research nexus as a driver of innovation, inclusive development, and regional integration.

Current Trends and Achievements

Africa has made notable strides in engineering-health convergence, particularly in developing technologies tailored to local health systems. Examples include: Biomedical Devices: South African institutions have developed locally manufactured ventilators (Lung Inspiratory Flow Enabler (L.I.F.E.)) and 3D-printed prosthetics , while Nigerian researchers are producing solar-powered cold chains for vaccine distribution .

mHealth Innovations: Kenya's M-TIBA platform has revolutionised health financing through mobile technologies. Simultaneously, engineers are creating mobile diagnostic kits integrated with AI for early disease detection in rural settings.

AI and Data Science in Health: The newly established Machine Intelligence and Neural Discovery (MIND)Institute at the University of the Witwatersrand exemplifies how machine learning and bioinformatics can be integrated into public health solutions—from modelling pandemics to designing smart biosensors.

Pan-African Centres of Excellence and AU-aligned initiatives, such as the African Science, Technology, and Innovation Indicators (ASTII) programme, are gradually fostering a culture of collaboration and data-driven policy in health and engineering research and development.

Persistent Challenges

Despite pockets of excellence, key challenges persist:

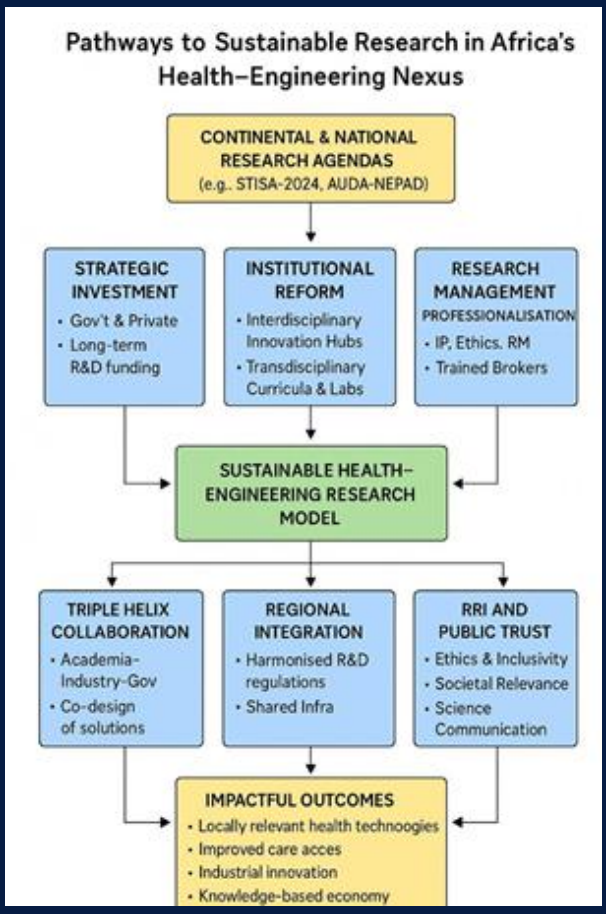
Underinvestment in research & development: Most African countries still invest far below the 2% GDP threshold recommended by UNESCO. For example, South Africa spends only 0.82%, and Nigeria just 0.22%. This underinvestment undermines research continuity and limits the scale of transdisciplinary programs. Consequently, an over-reliance on external international funding ensures that research aims are developed from outside the continent. In recent months, changing international policies have led to research funding from institutions such as the National Institutes of Health being halted, which has resulted in significant impediments to both clinical research and care, with devastating effects on patients. Fragmented research ecosystems: Health and engineering institutions often operate in silos, resulting in fragmented research. Rarely do biomedical engineers, epidemiologists, and materials scientists co-develop solutions. Fragmented policies and redundant regulatory hurdles slow innovation and uptake.

Brain drain and skills erosion: The migration of skilled professionals across both sectors continues to weaken local capacity. In many cases, critical infrastructure, such as advanced imaging facilities or medical device testing labs, remains underutilised due to a shortage of qualified personnel.

Barriers to collaboration: Collaboration agreements are often stalled by institutional inefficiencies or a lack of trained personnel in research management. Many partnerships collapse at the legal or administrative stage due to a poor understanding of the research process by those tasked with managing agreements . Low technology transfer and commercialisation: Research outputs rarely reach the market due to weak intellectual property frameworks, inadequate venture capital, and limited private sector involvement. The success of 3CR12 steel , developed collaboratively by South African researchers and industry, remains an outlier rather than a norm.

Towards a Sustainable Model for Health–Engineering Research

To build a more effective and sustainable research model at the health-engineering nexus, Africa must adopt systemic changes.



Strategic investment: Governments, private donors, and local industry must increase funding for interdisciplinary research and development (R&D), establishing competitive grant schemes, research endowments, and reward systems that prioritise locally relevant, sustained, impact-driven innovation in health and engineering. The envisaged funding structures should be long-term, aligned with national and continental research agendas (such as STISA-2024 by the African Union), and have a strong capacity-building component. Examples include the National Research Foundation in countries such as South Africa and the African Academy of Sciences (AAS) – AESA Platform.

Institutional reform: Universities and research councils must break disciplinary silos and support translational research through interdisciplinary innovation hubs co-funded by academia, industry, and government. For example, equitable access to health technology in rural areas cannot be engineered without cooperation among data scientists, clinicians, environmental engineers, and anthropologists.

Professionalisation of research management: Personnel involved in brokering partnerships must receive targeted training in research management, intellectual property law, and ethics. It is ineffective to rely solely on legal qualifications or diversity quotas if individuals lack operational knowledge of collaborative research.

Strengthening the triple Helix: Platforms for co-development of health tech, such as diagnostic tools, prosthetics, or hospital infrastructure, with manufacturers and service providers should be institutionalised. These engagements accelerate the translation of lab innovations to market and establish regional supply chains.

Regional integration: A pan-African R&D fund and harmonised regulatory protocols (e.g., for device approval or clinical trials) will reduce duplication and enable scale. Shared health-engineering infrastructure, such as biobanks , synchrotron facilities , or AI servers, should be developed with regional ownership.

Skill retention and capacity building: Structured mentorship, South-South mobility schemes, and doctoral networks focused on health-engineering topics are essential to curb brain drain. For instance, based on personal experience, postgraduate students trained in health-focused additive manufacturing are now anchoring national prosthetic labs in Kenya . One of the key benefits of this initiative is its potential to reduce the high costs associated with importing prosthetic devices into the continent. With the current youth bulge, Africa—and other developing regions—are projected to house the majority of the world's geriatric population by 2050. Continued reliance on imported prostheses poses a serious risk of exacerbating the global burden of disease due to disability, particularly in low-resource settings. This would undermine Sustainable Development Goal 3, which advocates for good health and well-being for all. Additive manufacturing, as a frontier of sustainable and localised production, offers a transformative opportunity. Establishing this capability within Africa not only enhances healthcare accessibility but also serves as a strong incentive for young scientists and engineers to remain on the continent and contribute meaningfully to its innovation ecosystem. There are also economic benefits for producing finished products within the continent rather than exporting raw materials to developed economies.

Responsible research and innovation (RRI): Embedding RRI principles—ethics, inclusivity, societal relevance—can build public trust and improve uptake. This can be achieved through researcher training in science communication, public engagement, and evidence-informed policymaking.

Call to Action

Africa stands at a pivotal moment to leverage the synergy between engineering and health research for transformative impact. The time has come to move beyond fragmented pilot projects and donor dependency toward a bold, continent-wide research model that is self-sustaining, inclusive, and grounded in local priorities. Governments must prioritise R&D in national development agendas. Universities must evolve into dynamic, innovation-focused institutions. The private sector must transition from a passive observer to an active collaborator. Together, these actors can create a resilient and responsive research ecosystem that not only solves Africa's health challenges but also powers its industrial and economic growth.

Data & Research Insights:

Africa's Trade Networks Through **Sustainable Infrastructure**

ROFIAT HASSAN
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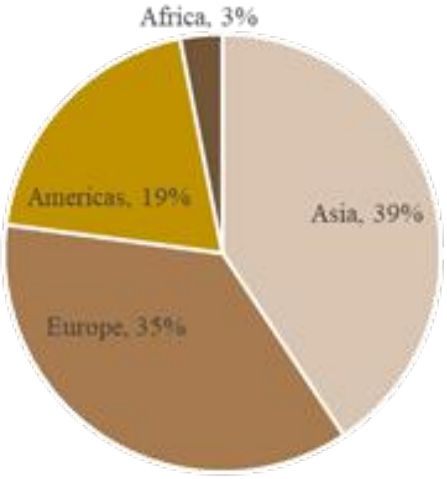
Research Team

What if Africa's greatest untapped resource isn't just underground, but in the roads yet to be built, the energy grids waiting to connect, and the digital highways linking minds and markets?

Africa is building the physical connections needed for long-term prosperity. These efforts are not just about roads and bridges, they are about connecting people, boosting trade and creating new opportunities for millions. Africa's economic future depends on its ability to develop sustainable infrastructure that enhances trade networks and fosters regional integration.

The continent has historically lagged in infrastructure development. The African Development Bank (AfDB) estimates that the continent requires up to $170 billion in annual investments to bridge this gap. Despite holding 17 per cent of the world's population, the continent accounts for just 3 per cent of global trade (Figure 1), a disparity driven in large part by inadequate infrastructure.



Source: *World Trade Organisation*

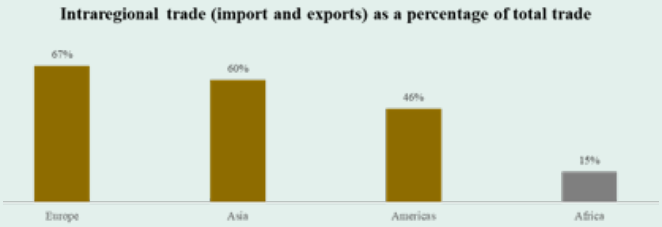
Africa's Transport Gap

Transportation infrastructure forms the backbone of any trade network. Transporting goods in Africa costs 30-40 per cent more than in other regions due to poor road and rail networks. Roads are the primary mode of transport and despite carrying 80 per cent of goods and 90 per cent of passenger traffic, only 43 per cent of Africa's main population have access to an all-season road, that is, roads that remain passable year-round, regardless of weather conditions.

Africa's road infrastructure varies widely by country, reflecting disparities in economic development and investment. South Africa, for instance, leads with a vast road network of approximately 750,000 kilometres, including about 158,000 kilometres of paved roads (Figure 2). Nigeria follows with around 195,000 kilometres, but only 60,000 kilometres are paved. In the Democratic Republic of Congo and Kenya, paved roads make up merely 2 per cent and 8 per cent of total road networks, respectively. These gaps matter because intra-African trade accounts for just 15 per cent of total trade, compared to 60 per cent in Asia and 70 per cent in Europe (Figure 3). Improved road networks are critical to closing this gap.

Country	Total Road Network (km)	Paved Roads (km)	Paved Roads (%)
South Africa	750,000	158,124	21
Nigeria	195,000	60,000	31
Ethiopia	180,000	0	0
Kenya	161,451	14,420	9
Congo DRC	152,373	3,047	2
Tanzania	145,203	11,201	8
Mali	139,107	0	0
Algeria	112,696	0	0
Zimbabwe	97,267	18	19
South Sudan	90,200	0	0
Mozambique	30,562	7,635	25
Sudan	30,000	8,000	27
Central African Republic	24,000	700	3
Congo, Republic of the	23,324	3,111	13
Uganda	20,544	4,257	21
Niger	18,949	3,912	21
Senegal	16,665	6,126	37
Benin	16,000	1,400	9
Eritrea	16,000	1,600	10
Malawi	15,451	4,074	26

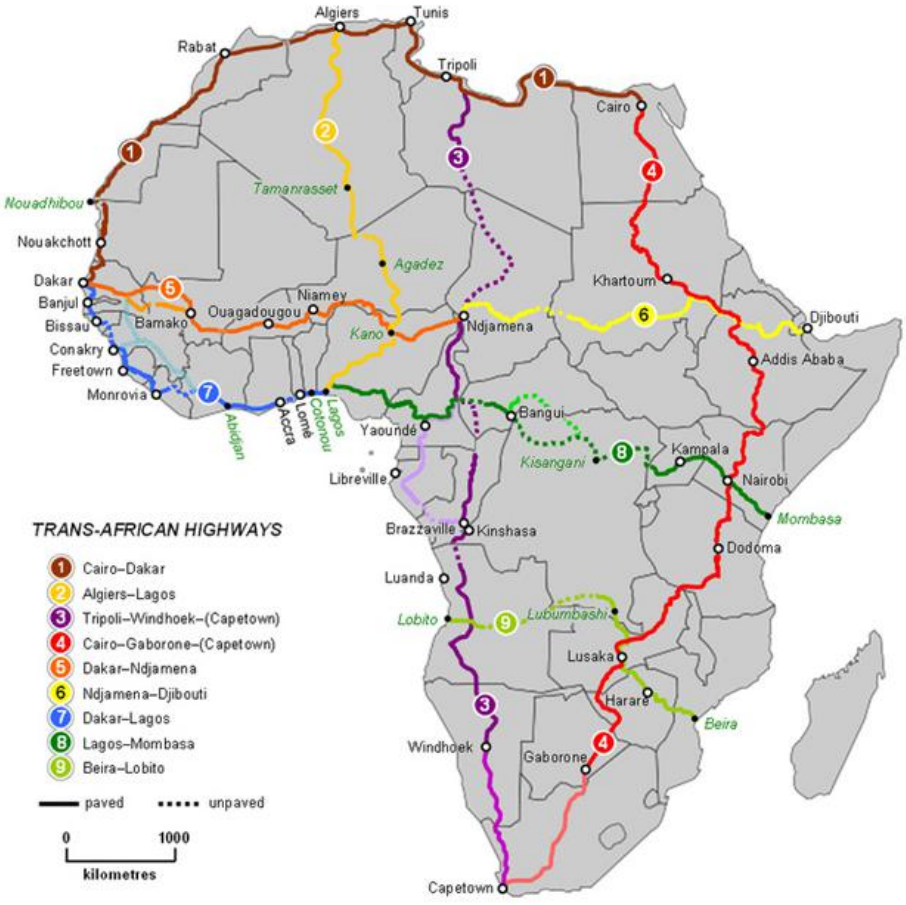
Source: U.S CIA



Source: Computed from UNCTAStat (2021)

Major infrastructure initiatives, such as the Trans-African Highway Network, are beginning to close these gaps (Figure 4). The Trans-Saharan Highway linking Algiers to Nigeria, spanning about 4,500 km, boosts trade between North and West Africa, crossing Niger and the Sahara . The Cairo-Cape Town Highway spans over 10,000 kilometres from Egypt to South Africa, linking some of the continent's largest economies . Meanwhile, the Lagos-Mombasa Highway promotes cross-border trade and regional integration between West and East Africa .

A recently initiated highway is the Abidjan-Lagos Highway, a six-lane, 1,028-kilometre transnational corridor connecting Côte d'Ivoire, Ghana, Togo, Benin, and Nigeria . The corridor currently handles 75 per cent of West Africa's trade . Once completed, it is expected to reduce travel time by up to 50 per cent and lower transportation costs by 30 per cent . It is also expected to create 70,000 direct and 160,000 indirect jobs , significantly boosting logistics, manufacturing, and trade across the region.

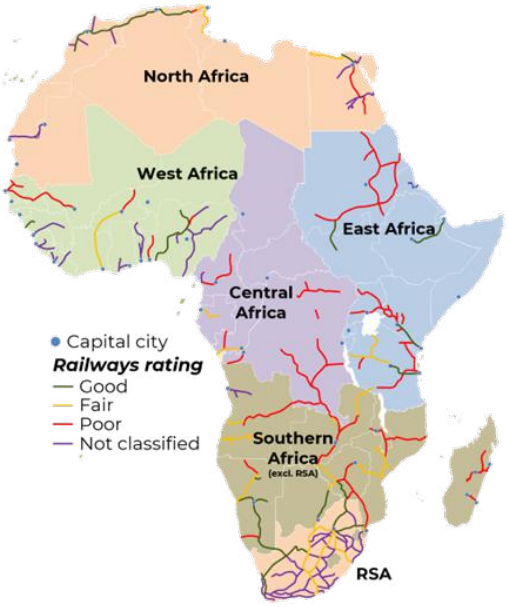


Source: Wikipedia

Rail Infrastructure Driving Trade and Integration

Rail transport offers another cost-effective and sustainable solution for moving goods, especially bulk commodities and raw materials (Figure 5). Africa's rail network, however, remains underdeveloped. With just 75,000 kilometres of rail (a density of 2.5 km per 1,000 square km compared to the global average of 23 km) , the continent still relies heavily on road transport.

South Africa operates the longest rail network in Africa, about 20,986 kilometres , supporting key sectors like mining and agriculture, while Egypt accounts for 85 per cent of regional passenger transport via rail .



Modern rail projects are proving transformative for Africa's regional trade and economic integration. In East Africa, Tanzania's Standard Gauge Railway (SGR) currently links Dar es Salaam to Dodoma and is being extended to Rwanda, Uganda, and Burundi . Once completed, it is expected to significantly reduce transport times and increase exports by 15–20 per cent annually, contributing an estimated $1.4 billion to Tanzania's GDP each year . Kenya's SGR has similarly revolutionised freight movement, transporting over 5 million tonnes of cargo in 2023 between Nairobi and Mombasa .

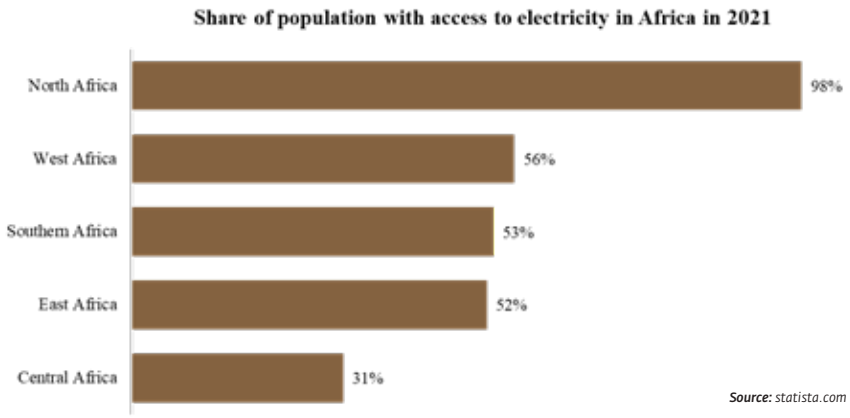
Further west, the Lobito Corridor, a $10 billion rail initiative, is set to connect Angola, the Democratic Republic of Congo, and Zambia . Built using climate-resilient materials and powered by renewable energy, the corridor will enhance regional connectivity and facilitate mineral exports across central and southern Africa . Meanwhile, the Ethiopia-Djibouti railway, a 753 km electrified line powered by hydroelectricity, stands as East Africa's first modern electric railway. Operational since 2016, it has created more than 55,000 jobs for locals, strengthening economic ties between the two countries while diverting significant freight volume from road to rail, lowering emissions, and improving logistics .

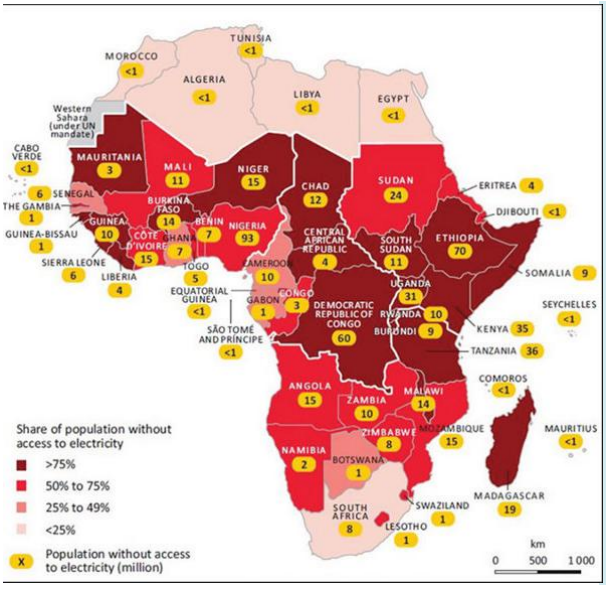
These rail developments reflect a broader shift toward sustainable, high-capacity transport infrastructure. By 2040, the Africa Regional Transport Infrastructure Network (ARTIN) is projected to handle 13–18 per cent of continental freight , unlocking billions in trade potential and paving the way for a more connected, climate-resilient Africa.

Ports are also embracing sustainable innovations to enhance efficiency and reduce emissions. South Africa's Port of Durban has achieved a 45 per cent reduction in vessels anchored outside the port and a 36 per cent decrease in container vessel waiting times . Additionally, the Port of Richards Bay is leading the way in renewable energy adoption, with plans to construct a 20 MW solar photovoltaic power plant and battery storage system as part of a broader initiative to decarbonise eight South African ports .

Powering Trade Through Energy Access

While transportation networks form the arteries of trade, reliable and sustainable energy serves as the lifeblood that powers Africa's economic transformation. Despite possessing abundant renewable resources, including 60 per cent of the world's solar potential , over 600 million Africans still lack electricity access (Figure 6) . Less than 20 of 54 African nations have electricity access rates exceeding 75 per cent (Figure 7) . This energy poverty comes at a steep cost. The African Development Bank estimates that power shortages reduce GDP growth by 2-4 per cent annually , severely limiting industrial productivity and trade competitiveness.





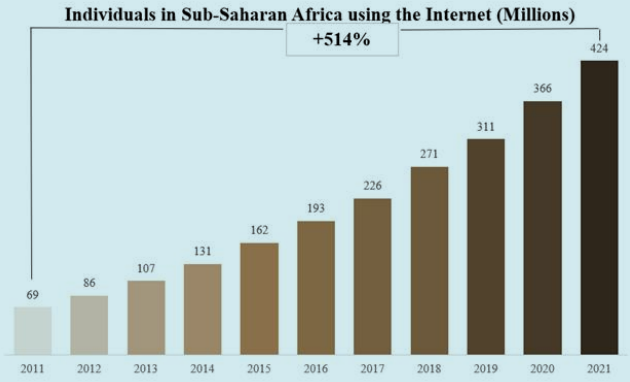
Africa is prioritising regional energy integration. Major projects, such as the Grand Ethiopian Renaissance Dam (GERD), set to become Africa's largest hydropower plant, exemplify how cross-border energy infrastructure can stimulate trade. Once fully operational, GERD's 6,000 MW capacity will not only electrify Ethiopia but also supply neighbouring countries like Sudan and Kenya, potentially reducing regional energy costs . Similar transnational hydropower initiatives,

such as the Inga Dam III in the Democratic Republic of Congo, projected to generate 11,000 MW, could power industries across Southern Africa, fostering new manufacturing and export corridors .

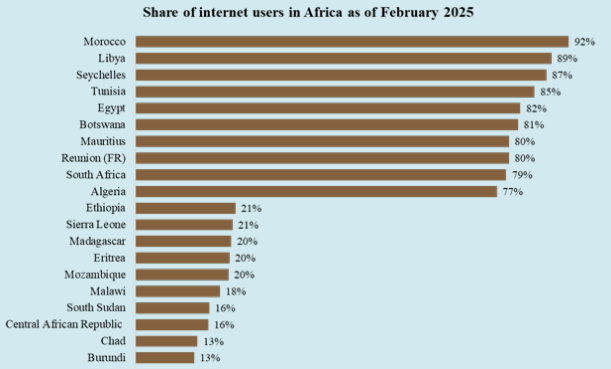
Africa's solar revolution is unlocking trade potential in remote regions. Morocco's Noor Ouarzazate Solar Complex, one of the world's largest concentrated solar plants, provides clean energy to over 2 million people and prevents the release of greenhouse gases equivalent to 0.7 million tonnes of CO_2 per year while powering agro-processing and manufacturing exports . The Desert to Power Initiative, spanning 11 Sahel countries, aims to deploy 10,000 MW of solar capacity by 2030, thereby facilitating access to electricity for 250 million people, enough to electrify trade hubs along the Trans-Saharan Highway . The economic benefits of reliable energy are clear. Studies have shown that a 1 per cent increase in exports leads to a 0.21 per cent increase in energy use , while a 1 per cent increase in electricity supply generates a 3.94 per cent increase in economic growth .

Connecting Africa Through Digital Infrastructure

In today's global economy, digital infrastructure is just as critical as physical roads, railways, or energy grids. It underpins everything from logistics and customs operations to financial transactions and cross-border communication, yet the digital divide across the continent remains wide. According to the International Telecommunication Union (ITU), in 2024, only 38 per cent of Africa's population had access to the internet (Figure 8), significantly below the global average of 68 per cent . While mobile broadband reached 86 per cent of the population, 14 per cent remained without any access. The gap was even wider in rural areas, where 25 per cent lacked coverage . The reasons are that broadband penetration is uneven, data costs are high, and digital literacy varies widely. These challenges hinder e-commerce, delay customs processes, and exclude many small and medium-sized enterprises (SMEs) from participating in digital trade .



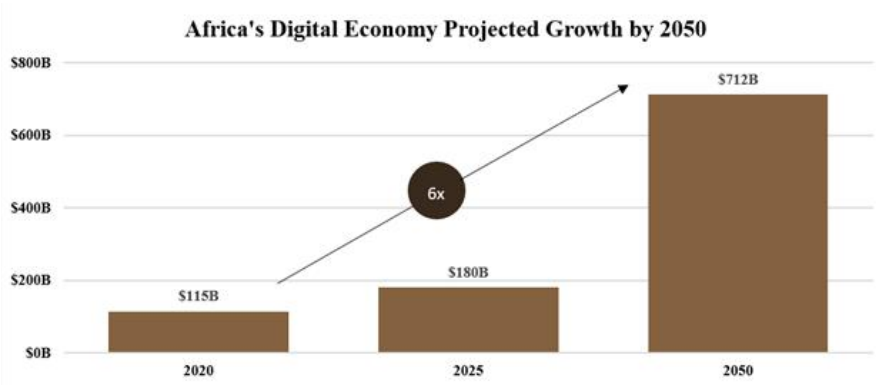
Source: World Bank



Source: statista.com

To bridge these gaps, African governments and regional organisations are investing in next-generation digital infrastructure . Undersea fibre-optic cables, such as the 2Africa submarine cable, a project led by a consortium including Meta and major telecom providers, are expected to connect 33 countries in Africa, Europe, and the Middle East . Once completed, Africa will be one of the longest subsea cable systems ever deployed, dramatically increasing internet capacity and speed across the continent .

Africa's internet economy is projected to contribute 5.2 per cent of the continent's GDP by 2025, with the digital economy expected to grow to $180 billion, up from $115 billion in 2020 (Figure 10) . Digital trade constitutes approximately 35 per cent of Africa's total services exports . The digital transformation of customs and border processes in Africa could significantly boost efficiency, potentially yielding $20 billion in annual trade gains . One of the most immediate benefits of digital infrastructure is streamlined trade. Electronic customs clearance, digital payments, and e-documentation reduce border delays, cut costs, and improve transparency . In countries like Togo, electronic customs clearance has slashed processing times from 48 hours to 5 hours . Digital infrastructure is not just an enabler; it's a multiplier. It amplifies the impact of energy and transportation investments, fuels innovation, and lays the groundwork for a resilient and diversified trade ecosystem.



Source: Techcabal

From Infrastructure to Economic Powerhouse

Intra-African trade reached $192 billion in 2023 and is projected to hit 50 per cent of total trade by 2030 under the African Continental Free Trade Agreement (AfCFTA) , a testament to the growing impact of sustainable infrastructure. Yet, poor infrastructure still cuts national growth by 2 per cent and industrial productivity by 40 per cent in many countries .

Across Africa, solar installers, data specialists, and smart-city engineers are building a new generation of infrastructure that is greener, more inclusive, and economically catalytic. With over 350,000 green jobs already created and digital platforms driving a $180 billion internet economy , the continent is not only catching up, it is also leapfrogging into a future of innovation and sustainable growth.

Africa's trade networks are no longer bound by geography alone. With the right investments in skills, innovation, and integration, infrastructure will not only support trade but also transform Africa into a connected, competitive, and resilient economic powerhouse.

In the Arena:

Financing Our Future: Insights from the Nigeria Climate Finance and Investment Summit 2025

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Nigeria's $27.2 billion climate financing gap represents both the country's greatest challenge and its most promising opportunity. As extreme weather events devastate communities and traditional energy systems falter, innovative financial mechanisms are emerging to bridge this divide, but only if stakeholders act decisively. The Nigeria Climate Finance and Investment Summit, held on 29–30 April 2025, brought together over 300 stakeholders for urgent dialogue on unlocking scalable climate finance. Under the theme "De-risking Private Sector Investment for Energy Transition," the summit tackled Nigeria's most pressing challenge: how to unlock scalable climate finance for energy transition and climate resilience.

Organised by the Clean Technology Hub with support from key partners, including the African Finance Corporation, the United Nations Environment Programme, the Nigeria Sovereign Investment Authority (NSIA), and others, the Summit responded to the mounting urgency around climate adaptation and resilience in Nigeria. With extreme weather events and economic vulnerability threatening developmental goals, the gathering charted a path forward to address these challenges.

Turning Ambition into Action: Financing a Climate-Resilient Nigeria
Ayaan Adam, Senior Director and CEO of AFC Capital Partners, set the summit's ambitious tone in her opening keynote. Rather than waiting for climate financing to trickle in, Nigeria must actively design and deploy tools to attract it. "Nigeria's climate future depends on how well we can turn ambition into action. That action must be funded, and that funding must be just, inclusive, and transparent," She emphasised.

Over two days, four thematic panels highlighted critical insights into the multifaceted barriers hindering climate-smart investment in Nigeria and innovative approaches to overcome them.

Building Climate-Resilient Infrastructure: Infrastructure must prioritise resilience over mere functionality, particularly given Nigeria's recent devastating floods. The role of catastrophic insurance emerged as a game-changer, offering protection for investments and communities from extreme weather losses. The Infrastructure Bank's potential to lead co-financing, risk-sharing, and green bond issuance was underscored as key to integrating Environmental, Social, and Governance (ESG) principles into long-term planning.

Financing Climate Tech Innovation: Nigeria faces a pressing foreign exchange risk challenge. Local currency financing ("earn in naira, borrow in naira") proves critical for reducing this risk, particularly for smaller projects. However, a heavy reliance on imported clean energy components, currently at 80%, undermines the naira and raises costs. Building robust local manufacturing supply chains and deepening domestic capital markets remain vital to overcoming this hurdle. Policy instability and implementation bottlenecks further complicate the landscape, underscoring the need for continuity and stronger coordination.

Microlending for Climate Startups: Clean energy startups and micro-enterprises face significant financing risks. Some of the risks identified include the lack of collateral and default rates, which hinder loan accessibility. Panellists proposed innovative risk mitigation strategies, including loan aggregation models and dedicated risk-sharing pools, to improve lending viability. Strengthening regulatory frameworks and accelerating dispute resolution also emerged as priorities for a thriving climate tech ecosystem.

Blended Finance for Net Zero: Green bonds and climate funds are already proving effective in Nigeria in bridging the public-private financing gap. Successful models like InfraCredit and the Green Guarantee Company demonstrate how guarantees and shared risk frameworks can make projects bankable and scalable. Panellists emphasised the importance of aligning financing instruments with business models and SDG targets, conducting thorough due diligence, and engaging investors early to secure commitments.

Investment Deal Room & Launch of the Nigeria Climate Finance & Investment Action Lab
A closed-door Investment Deal Room, hosted in partnership with development finance institutions and impact investors, bridged funding gaps for early-stage climate startups. Participating founders pitched ventures ranging from clean cookstoves, climate fintech and e-mobility to regenerative agriculture, solar and meteorological platforms. Several deals have progressed to follow-up conversations, creating promising partnerships across multiple sectors.

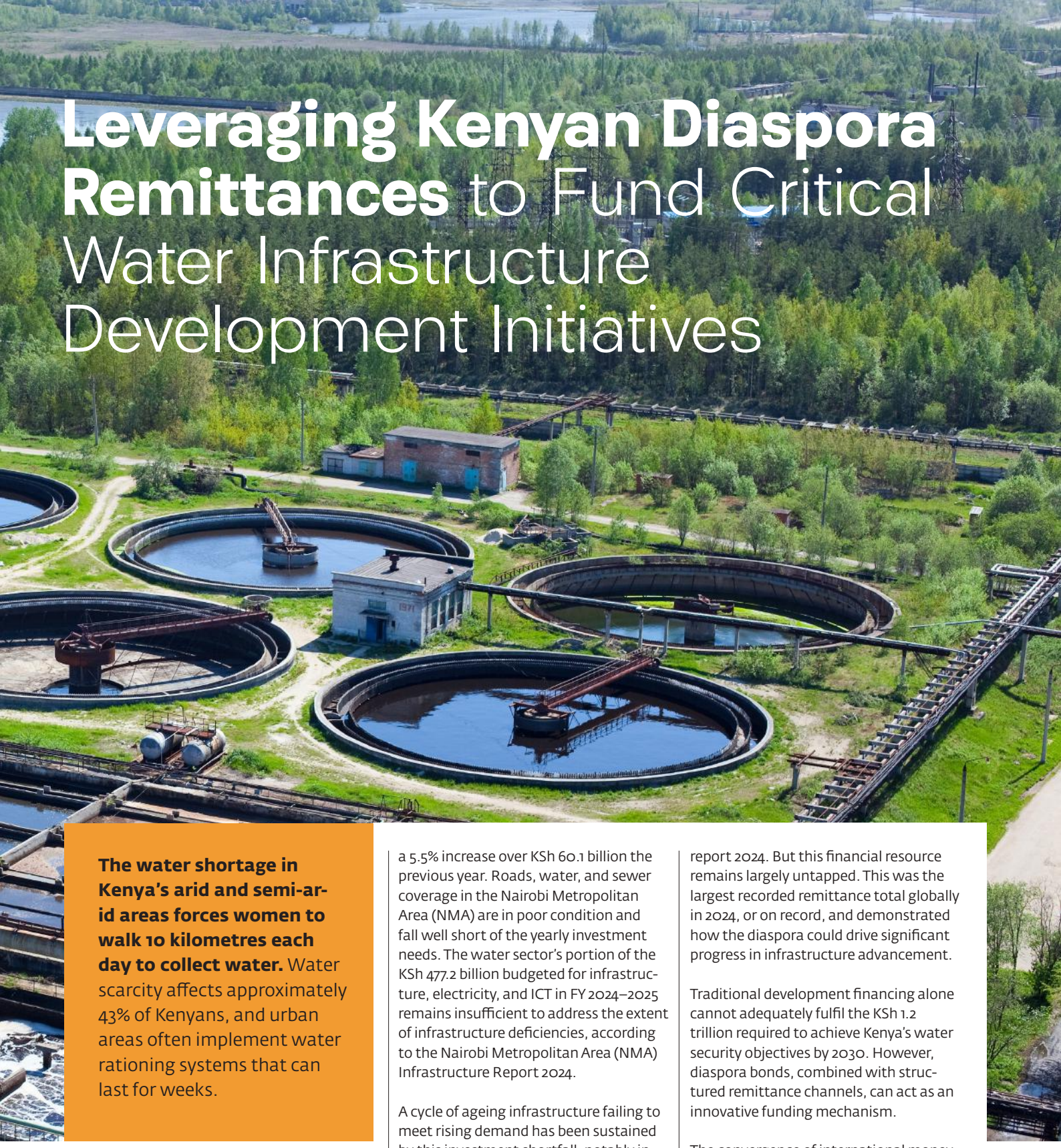
The summit also unveiled the Nigeria Climate Finance & Investment Action Lab, developed by Clean Technology Hub. The Action Lab aims to increase climate finance volumes by providing high-quality data on private sector flows, facilitating deals, and advocating for policy changes that support this effort. It offers practical resources for sub-national governments, including templates, policy briefs, and readiness checklists, ensuring states participate fully in the green transition.

The Road Ahead: Building an Inclusive and Sustainable Climate Finance Ecosystem
As part of its closing resolution, the Summit called for an annual Nigeria Climate Finance Tracker, a cross-sectoral tool to monitor public and private climate finance flows in-country. Crucially, organisers emphasised that climate finance cannot remain the preserve of elites or large institutions alone, but rather, there is a critical need to demystify climate funding for youth, co-operatives, indigenous groups, and grassroots innovators.

Clean Technology Hub, the summit's co-conveners, stated: "Our future cannot be funded by goodwill alone. It requires an ecosystem where capital, policy, and innovation intersect to create real change. This summit represents a building block—and we must keep building."

The summit's message was unequivocal: the window for climate-smart investment is not merely opening, it is accelerating. Success now hinges on sustained political will, innovative finance, inclusive policies, and cross-sector collaboration.
In climate finance, there are no spectators, only actors.

Leveraging Kenyan Diaspora Remittances to Fund Critical Water Infrastructure Development Initiatives



The water shortage in Kenya's arid and semi-arid areas forces women to walk 10 kilometres each day to collect water. Water scarcity affects approximately 43% of Kenyans, and urban areas often implement water rationing systems that can last for weeks.

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Chronic underinvestment in water infrastructure development is at the core of this water catastrophe. While it will cost an estimated KSh 1.764 trillion to provide universal access to water by 2030, the Kenyan water sector financing is still experiencing large funding deficits. In 2021, government spending on water supply projects totalled KSh 63.3 billion, a 5.5% increase over KSh 60.1 billion the previous year. Roads, water, and sewer coverage in the Nairobi Metropolitan Area (NMA) are in poor condition and fall well short of the yearly investment needs. The water sector's portion of the KSh 477.2 billion budgeted for infrastructure, electricity, and ICT in FY 2024–2025 remains insufficient to address the extent of infrastructure deficiencies, according to the Nairobi Metropolitan Area (NMA) Infrastructure Report 2024.

A cycle of ageing infrastructure failing to meet rising demand has been sustained by this investment shortfall, notably in rapidly urbanising areas where the growing population outpaces infrastructure development. Given the limited funding from the public sector, alternative funding sources are crucial for addressing the water infrastructure deficit in Kenya.

Kenya's growing diaspora population stood at 3 million, sending KSh 486 billion (USD 3.8 billion) in remittances in 2024, equivalent to 3.4% of Kenya's GDP, according to the CBK's annual remittance report 2024. But this financial resource remains largely untapped. This was the largest recorded remittance total globally in 2024, or on record, and demonstrated how the diaspora could drive significant progress in infrastructure advancement.

Traditional development financing alone cannot adequately fulfil the KSh 1.2 trillion required to achieve Kenya's water security objectives by 2030. However, diaspora bonds, combined with structured remittance channels, can act as an innovative funding mechanism.

The convergence of international money streams and national infrastructure requirements creates an opportunity for Kenya to establish an impactful program that enables diaspora citizens to finance water infrastructure development.

This article argues that water infrastructure financing could be significantly enhanced by leveraging underutilised diaspora remittances alongside primary development funds. Based on reviews of effective diaspora bonds, creative ways to

transfer remittances and examples of diaspora-driven projects, this analysis explains how diaspora investment can address essential needs in infrastructure financing. Examining Kenya's use of diaspora securities, drawing parallels with practices in India and Israel, and studying ongoing projects in Kenya, such as the Makueni Diaspora Water Project, this study advocates for expanding diaspora roles in water infrastructure development. The goal of the proposed frameworks is to take the money sent home through remittances from personal use and invest it in significant development projects for Kenya, showing the country's diaspora as collaborative partners rather than simply donors.

The Power of Kenyan Diaspora Remittances

The Central Bank of Kenya reported that diaspora remittances increased by 8.7% in 2023, surpassing foreign direct investment and official development assistance in terms of stability and growth dynamics. 58% of remittance flows come from North America, 28% from Europe, and Gulf nations contribute 9% of total remittances to Kenya. Capital flows, which traditionally support household expenses, education and healthcare, could target a broader spectrum of productive investments that extend beyond personal family assistance.

The evolving direction of diaspora capital investments indicates significant transformational changes for how diaspora funds contribute to national development. The Kenya Diaspora Alliance discovered through surveys that 67% of Kenyan diaspora members plan to invest in infrastructure projects when provided with trustworthy and transparent mechanisms that show visible results. Kenya's diaspora community has become a strategic investor in infrastructure development, creating opportunities for nationwide improvements in water security.

Specialised debt instruments known as diaspora bonds allow governments to use their citizens abroad as an investment tool for funding essential national development needs. The 2021 KenInvest Diaspora Infrastructure Bond was Kenya's inaugural attempt at diaspora-specific securities and attracted a surplus of KSh 22.4 billion against its KSh 15 billion target. This success can largely be attributed to the bond's competitive 7.5% tax-free return and its dedicated and transparent use for infrastructure projects.

Kenya has also adopted other diaspora bond frameworks, including India's USD 15 billion fundraising success since the 1990s, as well as Israel's USD 40 billion Development Bonds program. Success in these programs depends fundamentally on three core elements: institutional trustworthiness, alongside project clarity and affordable investment parameters. Kenya's USD 500 entry requirement, which extended inclusive infrastructure financing to all income brackets among its diaspora, was introduced.

Water Infrastructure Needs and Funding Gaps

Kenya's water security challenges present stark statistical realities: only 59% of the population has access to basic water services, with rural coverage lagging at 50.6% compared to urban areas, which have 75.8% coverage. The Water Services Regulatory Board estimates that achieving universal water access will require approximately KSh 1.2 trillion in investment by 2030 , five times the current annual water sector budget allocation. Critical projects awaiting financing include the Northern Collector Tunnel Phase II (KSh 30 billion), Mwache Dam (KSh 20 billion), and numerous county-level water harvesting and distribution networks averaging KSh 2-5 billion each.

Traditional funding sources, including the exchequer, multilateral loans, and private sector participation, have proven insufficient, with the water sector facing an annual financing gap of KS74 billion. This shortfall persists despite water infrastructure demonstrating robust economic returns, with the World Bank estimating that each dollar invested in water infrastructure generates KSh 440 (USD 3.5) in economic benefits through improved health outcomes, agricultural productivity, and industrial capacity.

The Makueni County Diaspora Water Project demonstrates how diaspora funds can be efficiently directed towards building water infrastructure systems. The 2023-launched initiative created a digitised platform that allowed diaspora investors to purchase "water shares" for specific borehole and pipeline initiatives while offering blockchain-secured access to construction updates and voting rights that enabled governance participation. Through this project, 1,842 diaspora investors from 27 countries contributed KSh 213 million to provide water access to 23,000 residents.

The combination of county government-provided land and operational oversight, the technical expertise of a water engineering firm, and the diaspora liaison office to manage investor relationships was central to the success of the project.

The Water Sector Trust Fund's Diaspora Co-financing Program offers similar financing models, combining diaspora contributions with government funds through a 2:1 matching mechanism for community water projects. The implementation of new governance frameworks, combined with technology-based investment platforms, enables large infrastructure projects to become financially viable units that diaspora investors can access.

Challenges and Path Forward

Despite showing initial potential for water infrastructure financing through diaspora resources, multiple substantial obstacles remain. Diaspora investors have expressed concerns about accountability due to past governance problems, which have resulted in trust deficits requiring fundamental reforms at a rate of 75%. An independent Water Infrastructure Investment Authority supported by diaspora board members would help minimise trust-based obstacles.

Innovative financing mechanisms face complex compliance issues due to regulatory fragmentation between the Capital Markets Authority, the Central Bank, and the Water Services Regulatory Board. A unified "Diaspora Infrastructure Finance Framework' would simplify these processes by implementing a single clearance procedure.

Finally, counties typically need specialised facilities to transform water development projects into investment-ready opportunities because their lack of packaging expertise stands as a crucial gap. The upcoming 2025-2030 National Diaspora Policy of Kenya needs to transition its diaspora participation strategy from symbolic gestures to developing clear frameworks that support infrastructure financing through risk management tools and specialised funding matches, alongside targeted tax breaks designed for underserved development investments.

With its growing investment potential, Kenya has the opportunity to address some essential development needs by linking water infrastructure requirements to a diaspora population motivated by development opportunities, thereby helping to achieve the water security that traditional financing mechanisms alone cannot provide. Kenya needs to redesign its remittance systems into institutionalised investment programs to establish an African approach for citizen-financed infrastructure improvement, that secures water resources and national economic independence. When activated correctly, the diaspora's capital potential transforms into a means of both economic mobility and development control.

Financing the Future:

Strengthening Domestic Capital for **Sustainable Infrastructure in Africa:** Kenya

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In February 2025, the Central Bank of Kenya (CBK) raised KSh 130.8 billion through infrastructure bonds, proving that domestic capital can fund Africa's development. Africa faces a defining moment in its development journey. Rapid urbanisation, population growth, and the devastating impacts of climate change have made sustainable infrastructure an urgent necessity. Sustainable infrastructure refers to systems and structures that are environmentally sound, economically viable, and socially inclusive. Yet, Africa faces a staggering infrastructure financing gap, estimated at over $100 billion annually. In light of global financial uncertainties and the risks of foreign debt, domestic capital mobilisation emerges as a vital solution. This paper argues that mobilising domestic capital is essential for sustainable infrastructure development in Africa, focusing on Kenya as a case study.

The Infrastructure Crisis in Africa

Despite progress, much of Africa still lacks access to basic infrastructure. Over 600 million Africans live without electricity, and nearly 420 million lack access to safe drinking water. Transportation networks are often underdeveloped, hindering trade and mobility. These deficiencies also impact education, healthcare, and overall quality of life. Africa requires not just more infrastructure, but sustainable, climate-resilient, and inclusive infrastructure.
This infrastructure financing gap is further widening due to population growth, urbanisation, and poor maintenance of existing facilities. The African Development Bank (AfDB) estimates that Africa needs between $130 billion and $170 billion annually to close this gap. However, public budgets are often constrained, and overreliance on external debt carries risks.

Kenya's Innovation in Domestic Capital Mobilisation

Domestic capital mobilisation involves harnessing financial resources from within a country to fund development. This includes tax revenues, household savings,

pension and insurance funds, and local business investments. Mobilising domestic resources reduces reliance on external debt and enhances economic sovereignty.

Kenya has shown innovation in mobilising domestic capital for infrastructure. One primary strategy involves issuing infrastructure bonds through the Central Bank of Kenya (CBK). These are offered to institutional and retail investors, enabling everyday Kenyans to invest in national development. For example, the infrastructure bond issued in February 2023 raised over KSh 87 billion for roads, energy, and water projects.

Kenya's pension and insurance sectors represent another growing source of capital. The Retirement Benefits Authority (RBA) encourages pension funds to invest in infrastructure. The National Social Security Fund (NSSF) participates in public-private partnerships (PPPs), contributing to closing the funding gap.

Digital Financial Innovation: Kenya's fintech sector, notably platforms like M-Pesa, have revolutionised domestic savings and investment practices. Digital savings products and mobile investment apps allow even low-income earners to participate. Initiatives like M-Akiba enable citizens to buy government bonds via mobile phones, directly funding infrastructure projects. Through this platform, ordinary Kenyans can invest small amounts using mobile money services like M-Pesa, earning interest while supporting the development of roads, water systems, and energy facilities. This approach makes investing in national development more accessible and inclusive.

Diaspora Capital: The Kenyan diaspora represents a valuable source of capital. Through diaspora bonds and investment platforms, the government taps into over $4 billion in annual remittances. The Kenyan National Treasury has launched programs to channel diaspora funds into housing and urban development. Key initiatives include the National Urban Development Fund (NUDF), which finances sustainable city growth, and the Affordable Housing Levy, aimed at building over 360,000 affordable homes for low-income families and public servants. Additionally, the government is exploring diaspora investment platforms, such as diaspora green bonds, to attract investments for housing and other priority sectors under the Big 4 Agenda.

Challenges to Domestic Capital Mobilisation in Kenya

Despite these advancements, Kenya continues to face several challenges. Tax compliance is low due to a large informal economy and a narrow tax base. Public trust in fund management remains weak, largely due to corruption and inefficiencies. Financial literacy gaps, especially in rural areas, limit participation in formal investment.

Kenya's capital markets, whilst relatively developed, still lack depth and liquidity. Regulatory hurdles, political instability, and delayed project implementation can discourage investment. Overcoming these issues requires ongoing reforms, strong institutions, and accountability.

Policy Recommendations and Innovative Solutions

To enhance domestic capital mobilisation, policymakers and relevant institutions responsible for economic and financial governance should;

Tax Reforms and Digital Systems: Implement progressive taxes and utilise digital tools for efficient and transparent tax collection.

Financial Inclusion: Expand access to mobile banking and investment services, particularly for women and rural populations, to promote economic empowerment and financial stability.

Infrastructure and Diaspora Bonds: Issue accessible infrastructure bonds and encourage diaspora investment.

Strengthen Capital Markets: Improve investor protections and simplify securities trading processes.

Public-Private Partnerships: Promote Public-Private Partnerships (PPPs) with clear frameworks and transparent procurement processes.

Civic Education: Run campaigns to boost financial literacy and public engagement in national development.

Sustainable infrastructure is essential for Africa's future. Relying solely on foreign aid and debt is neither viable nor desirable. Mobilising domestic capital offers a path to self-reliance and inclusive growth. Kenya provides a model of how innovation, strong institutions, and citizen engagement can unlock internal resources. With the right policies, Africa can build transformative infrastructure—funded by its people, for its future. Kenya's success with infrastructure bonds, mobile banking innovations, and diaspora engagement demonstrates that domestic capital mobilisation is an achievable reality that can transform Africa's development trajectory.

Spotlight:

Africa's Infrastructure Innovators: Impact, Scale, and Barriers

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Africa's infrastructure revolution is driven by innovative companies that demonstrate how local solutions can achieve a global-scale impact. From solar energy systems transforming rural communities to electric transport networks revolutionising urban mobility, African innovators are redefining what's possible in sustainable development. According to the African Development Bank, the continent requires between $68-108 billion annually to bridge critical infrastructure gaps, creating both challenges and opportunities for companies delivering climate-smart solutions. These innovators demonstrate that sustainable infrastructure can simultaneously address development needs, generate financial returns, and reduce environmental impact across diverse African markets.

Leading Infrastructure Innovators

Some of the key players leading innovation in sustainable infrastructure on the continent include;

1. M-KOPA (Kenya)

Impact: Over 1 million people served, 2.1 million tonnes of CO_2 emissions avoided
Funding: $751 million raised

M-KOPA has revolutionised renewable energy access in Kenya by combining mobile payment technology with solar infrastructure. M-KOPA's pay-as-you-go model enables low-income households to access clean energy without upfront costs, fundamentally changing energy accessibility patterns across East Africa.

2. D.Light (Multi-country)

Impact: 195 million reached, 40 million tonnes of CO_2 offset, 32 million homes powered, $628 million in loans disbursed to underbanked populations,91 million school-aged children reached, 14,000 local jobs created

Locations: Kenya, Nigeria, Uganda, Tanzania
Funding: $718 million raised

D.Light operates across multiple African markets, providing solar energy solutions appliances, smartphones, and flexible financing options to millions of users. Their comprehensive approach demonstrates how infrastructure investment can address multiple development challenges simultaneously.

3. Ampersand (Rwanda & Kenya)

Impact: 12,000 tonnes of CO_2 emis-

sions avoided, 280 million kilometres of electric travel powered, 45% increase in customer daily income, 2,200 electric motorcycles, 26 battery swap stations, 300+ people across Rwanda and Kenya, 1.2 million kilometres of electric travel, 120,000 battery swaps monthly.
Funding: $21.5 million raised

Ampersand's electric motorcycle network, featuring battery-swapping infrastructure, addresses transportation challenges whilst improving driver incomes. Their success in Rwanda, supported by favourable government policies, provides a replicable model for other African markets.

4. BasiGo (Kenya & Rwanda)

Impact: 4.2 million electric kilometres covered, 1.9 tonnes of CO_2 emissions avoided, 8.5 million litres of diesel avoided, 7.2 million transported, 64 electric buses operational.
Funding: $42+ million secured

BasiGo's pay-as-you-drive electric bus model addresses urban transport challenges whilst reducing emissions and operational costs for transport operators.

5. SunCulture (Multi-country)

Impact: 50,000+ farmers empowered, Up to 5x income increase for farmers, 50% cheaper than fuel-based alternatives
Locations: Ethiopia, South Sudan, Ivory Coast, Kenya, Nigeria, Uganda
Funding: $65+ million raised[6]

SunCulture's solar-powered irrigation systems address agricultural productivity challenges whilst reducing reliance on fossil fuels. Their innovations in carbon financing and payment plans make technology accessible to smallholder farmers.

Well-Funded Sectors Driving Growth

Renewable energy attracts the largest share of cleantech investment, driven by Africa's significant energy access gaps and abundant solar resources. Nigeria's Distributed Access through Renewable Energy Scale-up (DARES) project exemplifies this trend, with $750 million in World Bank funding aimed at providing clean electricity access to 17.5 million people. Solar mini-grids and off-grid solutions dominate investment flows, particularly in countries like Nigeria and Liberia, where small-scale solar systems power homes and businesses whilst stimulating local economies.

Electric mobility is another high-growth investment area, with Morocco's electric vehicle (EV) market projected to grow at a 24% annual rate between 2024 and 2030. As of 2022, Morocco had over 10,000 hybrid vehicles, 400 electric cars, and 12 electric buses, demonstrating the sector's rapid expansion. Rwanda and Kenya lead regional adoption through supportive government policies and infrastructure development, with a primary focus on two-wheelers and public transportation solutions.

Agricultural technology also attracts significant investment due to its dual impact on climate adaptation and economic development. Solar irrigation, precision farming, and supply chain solutions address food security challenges whilst improving farmer incomes. Agritech's potential is demonstrated by companies like SunCulture, which has already empowered over 50,000 farmers across six countries[6].

Systemic Barriers to Scaling

Despite promising growth, African infrastructure innovators face significant scaling constraints that limit their impact across the continent. Infrastructure limitations are the most fundamental challenge, with outdated grid systems across many regions hindering the integration of renewable energy solutions and reliable power delivery.

Regulatory complexity poses another major barrier, with varied regulations across Africa's 54 countries increasing investment complexity and operational costs. Companies looking to scale across multiple markets require specialised knowledge for navigating diverse legal frameworks and permitting processes, often deterring cross-border expansion.

Financing constraints continue to limit the growth potential of early-stage companies, particularly those requiring patient capital for scaling operations. High upfront costs, asset heavy business models and limited access to appropriate financing mechanisms constrain expansion plans. For example, to address the long-term financing gap in infrastructure, India established the National Investment and Infrastructure Fund (NIIF) in 2015 with a $6 billion corpus, which mobilises long-term domestic and international equity capital to address infrastructure financing gaps. With the government holding 49%, NIIF attracts patient capital for projects like renewable energy, overcoming constraints faced by traditional public sector banks.

Skills gaps are an emerging constraint as the sector's rapid growth outpaces skilled worker availability across technical, managerial, and policy areas. International precedents from Germany's Energiewende programme and US renewable energy training initiatives highlight the importance of targeted capacity-building programmes.
Finally, market fragmentation and limited data availability further constrain strategic planning and investment allocation. Cities with the greatest development needs often lack adequate data infrastructure for informed decision-making, which limits their ability to design and implement effective interventions.

Empowering African businesses with sustainability intelligence to build resilient and impactful businesses.

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