# AFRICA

The AR Initiative

## SUSTAINABILITY MAGAZINE

OCTOBER 2025 | VOLUME 04

2025
climate & sustainability events

Mid-decade climate finance review

Advancing Nigeria's recycling system

# The AR Initiative

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The AR Initiative

# LETTER FROM THE EDITOR

**Dear Readers,**

**As we approach the midpoint of this decisive decade for climate action, the urgency and the opportunity for Africa and the wider global community is sharper than ever. In this Issue IV of Africa Sustainability Magazine, we take stock of where we stand: from finance and innovation to global diplomacy and the everyday realities of waste, food, and energy.**

At the heart of this edition is our feature, At the Crossroads: Mid-Decade Climate Finance, Trends, and Africa's Road to COP30. With Brazil hosting COP30 later this year, we examine how climate finance flows are shaping the continent's options, and what African leaders and institutions must do to move from pledges to agency. In this issue, the stories capture both the turbulence and the creativity defining climate action in 2025. They remind us that Africa is shaping new paradigms of finance, innovation, and resilience that the world shouldn't ignore.
The task ahead is about more than meeting global emissions targets. It is about transforming economies, strengthening communities, and ensuring that sustainability is not an abstract ambition but a lived reality. It is about recognising that climate justice and economic justice are inseparable and that Africa, with its vast potential and youthful energy, stands at the forefront of this convergence.
As we move into the second half of the decade, one truth becomes clear: Africa's voice must be central. We hope you enjoy this issue that amplifies African innovation, African resilience and an insistent call for climate action to mean opportunity, growth and equity for all Africans.

Labake Ajiboye-Richard
Editor-in-Chief, Africa Sustainability Magazine

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**October 2025** ISSUE 04

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# QuarterlyBrief

## Egypt and Mexico Strengthen Environmental Cooperation to Address Shared Challenges

FAITH OSAMAYE
*Research Associate at AR Initiative*

Egypt and Mexico face parallel environmental challenges, including widespread land degradation and desertification, as well as mounting pressures on waste management. Both nations are already grappling with the effects of climate change on agriculture, water resources, and ecosystems, making closer cooperation increasingly urgent.

In Egypt, about 3.6 acres of farmland are lost to infertility every hour. With less than 3% of the country's land arable, over-cultivation and heavy chemical use are intensifying soil exhaustion. Mexico faces similar pressures: 134.9 million hectares — nearly 72% of its territory — are degraded. By 2050, the country is projected to experience a 2–3% temperature rise, faster inland warming, and a 7–9% decline in rainfall. Such changes threaten staple crops across both countries. The World Bank warns maize yields could drop by 19% and wheat by 15%, a major concern for Egypt, where agriculture provides nearly 28% of the jobs.

Waste management adds another layer of urgency. Egypt generates 50,000–60,000 tonnes of waste daily, or about 22 million tonnes annually. Mexico produces 0.94 kg per person per day — totalling 44 million tonnes per year — yet only 10% is recycled, while 70% ends up in landfills. Together, these figures underscore the shared need for comprehensive solutions that address both soil and climate pressures alongside the growing waste crisis.

Against this backdrop, Egypt is deepening its role in international cooperation. In Cairo, Minister of Environment Yasmine Fouad met with Mexican Ambassador Leonora Rueda Gutierrez to explore opportunities for enhanced bilateral and multilateral collaboration. Discussions focused on desertification, climate change, and waste management, with representatives from both nations in attendance.

The partnership will prioritise tackling land degradation, promoting climate-resilient farming, improving waste management, and advancing the green transition. It also underscores the growing importance of South–South cooperation in climate and biodiversity efforts. By working together, Egypt and Mexico aim not only to safeguard their own farms and communities but also to generate solutions that can serve as models for other countries confronting similar environmental threats.

**Ghana and Singapore Strengthen Sustainable Development Partnership** Ghana and Singapore have launched a new partnership focused on sustainable development, carbon markets, and value-added agriculture, with the goal of boosting industries and creating jobs in Ghana.

During bilateral talks in Singapore, President Tharman Shanmugaratnam announced that Singapore had become the first Asian country to sign a carbon credit implementation agreement with Ghana, describing it as a platform to channel investment into low-carbon growth. He also signaled Singapore's interest in agribusiness and downstream processing of crops such as cashew and cocoa, sectors central to Ghana's industrial ambitions.

On a three-day State Visit, Ghanaian President John Dramani Mahama highlighted how the partnership aligns with Ghana's Reset Agenda, which prioritizes agriculture, agro-processing, and services as engines of job creation. He pointed to the Volta Economic Corridor, where over two million hectares are being developed into agro-processing parks, irrigation schemes, and modern farming hubs—describing it as a potential game-changer for Ghana's economy.

Mahama also underscored the promise of Ghana's creative and digital services economy, which is rapidly emerging as a major source of youth employment. President Tharman, acknowledging the shared challenge of job creation, pledged Singapore's support for Ghana in strengthening SMEs and advancing green and agro-industrial projects.

Framing the partnership within Africa's wider economic opening, Mahama noted that it supports Ghana's role under the African Continental Free Trade Area (AfCFTA). He congratulated Singapore on its 60th independence anniversary and reaffirmed Ghana's commitment to turning recent economic stability into sustainable, job-rich growth through green finance, agro-processing, and digital innovation.

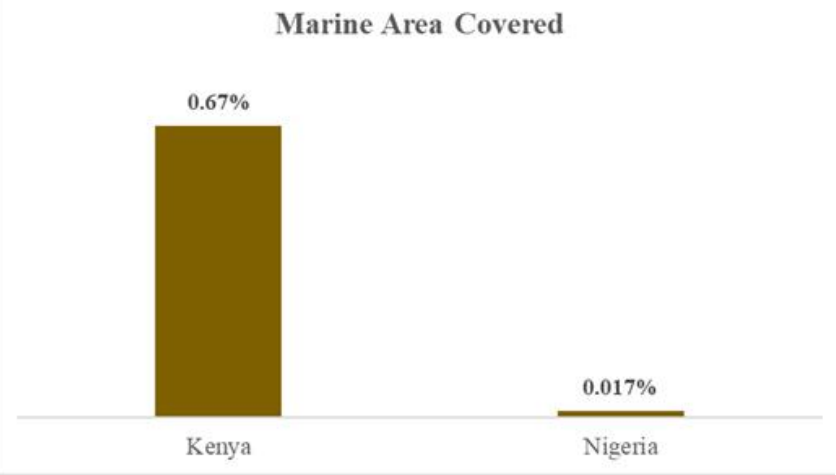
This collaboration illustrates how South–South partnerships can align Africa's economic recovery with climate action, while unlocking opportunities for trade, investment, and job creation under the AfCFTA framework.

**IOI-Nigeria and NIOMR Call for Global Cooperation and Local Innovation in Marine Conservation** To mark the 2025 World Ocean Day, the Nigerian Institute for Oceanography and Marine Research (NIOMR) and the International Ocean Institute (IOI)-Nigeria emphasised the role of oceans in human survival and planetary health, calling for global cooperation and local innovation. The event, held on June 11, 2025, at NIOMR Headquarters in Lagos, carried the theme "Wonders: Sustaining What Sustains Us" and brought together scientists, policy experts, advocates, and community leaders committed to ocean sustainability.

Nigeria, with 853 km of coastline and an Exclusive Economic Zone of 210,900 km², relies on marine ecosystems that contribute 3–5% of GDP and support millions of livelihoods. But these resources face growing threats from plastic pollution, oil spills, and overfishing. A recent study found 22,079 microplastic particles in a single litre of Osun River water, the highest ever recorded worldwide, highlighting severe risks to communities and fish stocks. Oil spills in the Niger Delta average 240,000 barrels annually and are largely caused by unknown factors, sabotage, and equipment failure, continue to devastate ecosystems, while overfishing leaves a deficit of 2.5 million metric tonnes and costs Nigeria about US$70 million each year in illegal catches.

NIOMR's Director of Research, Dr Obatola Parcey, stressed that marine conservation must remain a national priority. He pointed to NIOMR's partnership with IOI- Nigeria in advancing ocean literacy, stakeholder engagement, and evidence-based policymaking. IOI-Nigeria Director, Mr Akanbi Williams, added that protecting marine biodiversity is both a local and global responsibility.

A useful example comes from Kenya, where the Watamu Marine Governance initiative, a partnership involving A Rocha Kenya, the Kenya Wildlife Service, etc, has successfully established multi-stakeholder governance tools and sustainable livelihood programs. The initiative demonstrates how partnerships can build acceptance, deliver measurable protection gains, and ensure long-term sustainability. While Kenya has formally protected 0.67% of its marine area, Nigeria lags far behind at just 0.017%, underscoring the urgency for more decisive collaborative action.




Prof. Babajide Alo delivered the keynote speech, highlighting the new Biodiversity Beyond National Jurisdiction (BBNJ) Treaty, which addresses governance gaps in international waters by regulating marine genetic resources, requiring

environmental impact assessments, and enabling high-seas protected areas.

This year's World Ocean Day event underscores the urgency of rethinking how we interact with the ocean. It highlights the need for collaborative global frameworks like the BBNJ treaty, while also calling on national actors to invest in local innovations, public awareness, and community-led conservation efforts.

**Carbon Border Adjustment Mechanism** The European Union's Carbon Border Adjustment Mechanism (CBAM), which entered its transitional phase in October 2023 and will be fully operational by 2026, represents one of the most significant shifts in global trade policy in decades. Designed to put a "fair price" on the carbon embedded in carbon-intensive goods imported into the EU, the CBAM aims to prevent carbon leakage and promote cleaner industrial production worldwide.

On February 26th, 2025, the EU amended the framework to introduce a de minimis threshold of 50 tonnes of goods per importer per year, exempting most small-scale and occasional importers from CBAM rules while still covering 99% of emissions . The mechanism applies to imports such as iron and steel, cement, aluminium, fertilisers, hydrogen, and electricity. Importers must purchase certificates corresponding to the greenhouse gas emissions embedded in these products, effectively placing a carbon price on them.

While CBAM is framed as a climate tool, it carries serious economic implications for Africa, where economies are heavily reliant on carbon-intensive exports to the EU. Analysts predict that Africa's GDP could decline by 0.91% (about US$25 billion based on 2021 levels). If CBAM expands to other imports, the impact could be even greater: EU-bound exports from Africa could fall by 5.2%, cutting GDP by up to 1.12%. Sector-specific projections show aluminium exports shrinking by 13.9%, iron and steel by 8.2%, fertilisers by 3.9%, and cement by 3.1%. In higher carbon price scenarios, overall African exports to the EU could decline by nearly 6%.

**Africa's vulnerability stems from three main factors:**

High dependence on the EU market

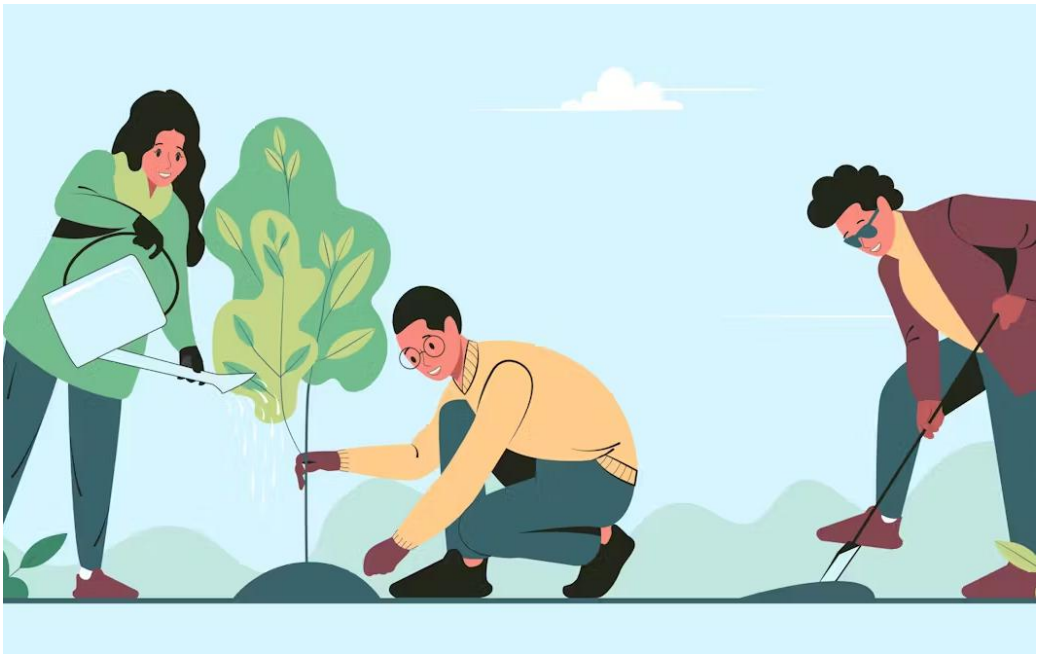
Carbon-intensive production methods

Existing economic fragilities

Fertilisers alone account for 26% of Africa's exports to the EU, iron and steel for 16%, aluminium for 12%, and cement for another 12%. The effects will not be uniform across the continent. South Africa, with its coal-heavy electricity grid, is especially exposed. Cement and aluminium exports are likely to face steep tariffs. At a climate conference, President Cyril Ramaphosa warned that regulatory frameworks like the EU's carbon border tax could cripple developing economies, urging countries to accelerate their shift from fossil fuels to renewable energy. South Africa remains one of the world's most carbon-intensive economies, producing 709g of $CO_2$ per kilowatt hour in 2022 .

Not all outcomes are negative. Ghana, which sends about 80% of its aluminium exports to Europe, could gain a competitive edge if it proves its production carries lower emissions. This highlights CBAM's dual nature: while it poses risks for carbon-intensive exporters, it also creates opportunities for economies that green their industries quickly.

To mitigate risks, African countries must actively participate in EU negotiations as the framework moves toward full implementation in 2026. Options include pushing for a gradual rollout, seeking special exemptions for vulnerable economies, narrowing the list of covered products during the transition, and removing indirect emissions from CBAM's scope to ease compliance . Ultimately, CBAM is not simply a new tariff; it signals a fundamental shift: carbon content is becoming a trade issue in its own right.



# Industry Insight:

## **At the Crossroads:** Mid-Decade Climate Finance, Trends, and Africa's Road to COP30

**LABAKE AJIBOYE-RICHARD**
*Principal Consultant at the AR Initiative*

As we approach COP30 in Belém, Brazil, this November, the global sustainability agenda is at a crossroads. The first half of the decade has delivered record levels of climate finance and systemic reforms in disclosure. Yet profound gaps remain between ambition, delivery, and access—especially across African markets. The next five years will define whether governments, financial institutions, and businesses can close those gaps in time to keep the 1.5°C pathway alive.

### Climate Trends: Acceleration and Bottlenecks

Renewables are expanding faster than ever, but not fast enough. The International Energy Agency projects global renewable capacity to increase 2.7× by 2030, shy of the COP28 pledge to triple capacity. Meanwhile, enthusiasm for hydrogen has cooled: the IEA cut its 2030 forecast by 25% as projects stall on costs and infrastructure. Carbon pricing, however, is maturing into a mainstream policy tool. Coverage now extends to 28% of global emissions, generating over USD 100 billion in 2024 for public budgets. For Africa, these global currents present both risks and opportunities. Slower-than-needed

renewable deployment highlights why concessional capital and blended finance are critical to scale Africa's solar, wind, and mini-grid pipelines—especially as the continent surpassed USD 50 billion in climate finance in 2022 but still faces a multi-trillion-dollar gap to 2030. Hydrogen's recalibration matters for countries like Namibia and Morocco, which are positioning as exporters of green fuels; tempered global demand could delay projects but also open space for African governments to shape fairer offtake agreements. Expanding carbon pricing regimes, meanwhile, offer a fiscal and market lever as the Africa Carbon Markets Initiative aims for 300 Mt credits annually by 2030 and USD 6 billion in revenue, signalling how Africa can benefit if integrity and access challenges are addressed. In short, the acceleration-bottleneck dynamic globally mirrors Africa's own dilemma—fast innovation and rising ambition constrained by financing, infrastructure, and policy bottlenecks that COP30 must help unlock.

## Climate Finance Flows: Record Highs, Historic Gaps

Global climate finance reached USD 1.9 trillion in 2023, almost double 2021 levels and exceeded USD 2 trillion for the first time in 2024. Yet this remains only a third of the USD 6.3 trillion per year needed through 2030. Mitigation absorbed the lion's share (USD 1.78 trillion), while adaptation remains underfunded at just USD 65 billion. For the first time, developed countries met the USD 100 billion annual climate finance pledge in 2022—two years late and Multilateral development banks followed with a record USD 137 billion in 2024, alongside USD 134 billion in private co-financing.

At COP29 in Baku, negotiators agreed on a new post-2025 climate finance goal (NCQG): at least USD 300 billion annually by 2035. But the figure, not inflation-adjusted, risks overstating ambition. Similarly, the Loss and Damage Fund—operationalised after COP28—has only mobilised USD 768 million in pledges as of April 2025, with USD 250 million in initial disbursements planned through 2026. In Africa, climate finance flows rose 48% to exceed USD 50 billion in 2022. The rise was driven overwhelmingly by international public flows: multilateral development finance institutions (DFIs) were the single largest providers, supplying 43% (USD 19bn) of all flows and 53% of public flows. Private finance almost doubled to USD 8bn, led by corporates and commercial FIs. However, overall international sources still account for 87% of tracked finance—underscoring how dependent Africa remains on external capital and how under-mobilised domestic savings are. Africa's portfolio is more balanced than other regions: in 2021/22, flows were 39% mitigation, 37% adaptation, and 24% dual-benefit, well above other regions for adaptation share. Multilateral DFIs concentrated funding in energy systems (21%) and AFOLU (agriculture, forestry and other land use) (20%), plus a large cross-sectoral bucket (policy, capacity-building, DRR). Private finance was skewed towards mitigation (80%) and energy (72%) sectors, while adaptation-oriented sectors, such as water and AFOLU, relied far more on public and concessional funds.

Funding remains highly concentrated on the continent, as 10 countries account for ~50% of Africa's total, while 30 countries share 10%. The top recipients include Egypt, South Africa, Nigeria, Morocco, Ethiopia, Tanzania, Kenya, Côte d'Ivoire, DRC, and Mozambique—a mix of large markets with pipeline maturity and stronger enabling environments. Vulnerability targeting remains weak: the 10 most climate-vulnerable African countries receive 10–11% of the flows. These flows have delivered tangible progress on the ground, even if uneven.

## Impacts seen in the past half-decade.

- Electricity access & enterprise: Under Nigeria's national electrification push, World Bank–backed programs helped deliver 125–180 commissioned mini-grids and >1 million solar home systems, providing or improving electricity access for ~5.5–5.9 million people and thousands of MSMEs/health facilities, while catalysing private developers and jobs.
- Utility-scale renewables and grids: Egypt's Benban Solar Park (1.5–1.8 GW complex) is now a regional emblem of blended public-private finance—case studies report hundreds of thousands of tons $CO_2e$ avoided per year, 500 GWh annual output from one developer's block alone, and >1,500 jobs created across construction and operations.
- Baseload clean power: Kenya's sustained climate-aligned investment in geothermal expanded capacity to 990 MW (national total), now supplying 47% of the country's power and anchoring high-renewables system reliability. New phases (e.g., Olkaria VII) are approved to add more capacity.

**Despite the progress, gaps in scale and equity persist. Even after the jump to >USD 50bn in 2022, Africa's needs by 2030 remain in the USD 2.5–3 trillion range. Flows are too concentrated in a handful of countries; too debt-heavy for already indebted governments; and too mitigation-skewed on the private side, leaving adaptation (e.g., water and AFOLU) reliant on concessional public funding. The recent surge proves that bankable pipelines + concessional risk-sharing move capital at scale. But to reach continental targets, negotiators and financiers need to: 1) front-load adaptation and grant/low-cost shares; 2) unlock domestic institutional capital (pensions/insurance) into climate assets; and 3) de-concentrate flows via country platforms that build pipelines beyond the usual top-ten recipients—all while tightening integrity and access for high-integrity carbon markets to complement public budgets.**

Sustainability Table SERIES 2025

AVANT GARDE

THEME

# SUSTAINABILITY in ACTION:

## Scaling Impact For a Thriving Future to achieve The SDGs

**Launch of STS 2024 Monograph:**
Insights on Navigating Challenges and Leveraging Opportunities to advance Sustainable Growth

Thursday, 23rd October 2025

Lagos Oriental Hotel, Victoria Island, Lagos

10am

**Register via:**
http://bit.ly/4eUpFof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# **Climate Season:** When Sustainability Meets Geopolitics

As September unfolds, the global climate and sustainability calendar comes alive with high-stakes diplomacy, bold pledges, and mounting tensions. In 2025, that momentum began with the 80th session of the UN General Assembly in New York, overlapping with a packed schedule of Climate Week events. However, this year's climate forum did not occur in a vacuum; it was overshadowed by crises—conflicts, humanitarian disasters, and contested sovereignty that compelled many participants to confront the intersection of climate action and justice, as well as the extreme volatility it entails.

Against that backdrop, a few key threads emerged at the heart of September's gatherings:

**1. Africa's Push for Recognition and Leadership** Amid the UNGA proceedings, a coalition of the United Kingdom, Canada, and Australia formally recognised Palestine, bringing the number of sovereign recognitions to 156. This move highlighted how global forums are not just about climate, but about legitimacy, power, and whose narratives get validated. African heads of state seized the moment to urge reform of global institutions. They argued that the UN Security Council and other governance bodies no longer reflect today's global realities. The continent is calling for a stronger voice, one that acknowledges shifts in influence, demographics, and the climate justice imperative, in a bid to reshape decision-making leverage in climate-relevant institutions.

**2. From Decarbonisation to Energy Security & Growth** The discourse is visibly shifting. While decarbonising financial institutions and "green" portfolios have long dominated climate finance debates, September's summit spaces saw more emphasis on energy security and solution-driven growth. In essence, the narrative is evolving from "Which assets do we divest?" toward "How do we sustain energy, jobs, and development in a volatile world?" This pivot matters deeply for developing countries, where energy shortages and inequality amplify climate vulnerability. It also signals that donor priorities may begin to recalibrate: backing projects that combine emissions reductions with economic uplift.

**3. Climate, Conflict, and Moral Imperatives** Perhaps the most emotionally fraught dimension of September's climate forums was how participants grappled with ongoing crises. Delegates could not ignore that climate action is unfolding amid war, mass displacement, genocides, and severe socioeconomic stress. Some used the platform to call out the moral contradictions of championing climate action while turning a blind eye to human suffering. This growing awareness may prompt COP30 to incorporate stronger statements and mechanisms regarding loss & damage, climate justice, and equity-based finance as core pillars.

## Key Takeaways & What They Mean for COP30

**Recalibration of climate finance:** Expect more pressure at COP30 to align investment flows not just with low-carbon goals, but with energy access, economic viability, and inclusion.

**Africa's political moment:** The continent is pushing to upgrade its voice in multilateral institutions. If successful, African priorities—adaptation, resilience, infrastructure finance—stand a better chance of being central in COP outcomes.

**Justice at the core:** The moral tenor of September suggests COP30 could see stronger language (or even binding mechanisms) for reparations, loss & damage, and climate equity.

**Bridging crises and climate action:** With war, displacement, and humanitarian crises now foregrounded, COP30 will likely be judged not on grand emissions targets alone but on how climate policy responds to real human suffering.

# Most Funded Innovators in Sustainability in Africa

Across Africa, sustainability-focused companies are transforming energy access, enhancing climate resilience, and improving the lives of rural communities. With financing models that blend equity, debt, and securitisation, these pioneers are unlocking billions in climate-smart investments. Here are four of the most funded companies driving sustainable development across the continent.

### 1. Sun King (formerly Greenlight Planet) - $1.0 billion (Renewables)

**About:** Sun King, headquartered in Nairobi, Kenya, designs, distributes, and finances solar home systems and related products such as lamps, chargers, and inverters. Operating primarily on a pay-as-you-go model, it serves off-grid and low-grid households across Africa, with active markets in Nigeria, Kenya, Uganda, Tanzania, Mozambique, Togo, Cameroon, South Africa, Malawi, and Zambia.

**Fund:** Sun King has attracted over $1 billion in financing through equity, debt, and securitisations. In May 2025, Sun King secured an $80 million naira-denominated loan facility from the International Finance Corporation (IFC) and Stanbic IBTC Bank to expand access to solar in Nigeria and, in July 2025, completed a $156 million securitisation of receivables in Kenya, with senior tranches provided by Citi, ABSA, KCB, Stanbic Bank Kenya, and Co-operative Bank of Kenya, while mezzanine financing came from development finance institutions BII, FMO, and Norfund. Altogether, these financings, combined with its PAYGo instalment model, have enabled Sun King to finance more than $1 billion in solar loans to customers across Africa.

**Total 2025 funds raised: $236 Million | Leading investors: DFIs + Private Banking**

### 2. d.Light - $532 million (Renewables)

**About:** d.light, founded in 2007 and headquartered in Nairobi, Kenya, is a global leader in off-grid solar energy and PAYGo financing. It designs, manufactures, and distributes solar lanterns, solar home systems, appliances, and financing solutions to expand access to affordable, clean energy for low-income households and small businesses.

**Fund:** d.light's financing base includes a $41M equity round in 2018 led by Inspired Evolution alongside FMO, Norfund, and Swedfund; a $15M equity investment in 2021 from the same group of impact investors plus Shell New Energies and KawiSafi Ventures; and $176M in receivables financing in 2024 from African Frontier Capital. In 2025, it secured $300M in new securitised financing commitments, bringing its total raised to about $532 million.

**Total 2025 funds raised: $300 Million | Leading investors: African Frontier Capital + securitisation partners**

### 4. Bboxx - $356 million (Renewables)

**About:** Bboxx provides off-grid solar energy solutions across Africa, including in Rwanda, Kenya, Nigeria, and the Democratic Republic of Congo. Its solar home systems with smart metering allow customers to pay in affordable instalments, combining technology and finance to expand clean energy access.

**Fund:** Bboxx closed a $50 million Series D round in 2019 led by Mitsubishi Corporation, with ENGIE Rassembleurs d'Energies, Bamboo Capital Partners, DOEN Participaties, nd MacKinnon, Bennett & Company. It has also raised €6 million through a record-breaking crowdfunding initiative with Trine. In May 2025, Bboxx Nigeria secured access to a $300 million World Bank-backed fund via the Nigeria Electrification Project, targeting the 90 million Nigerians without reliable electricity.

**Total 2025 funds raised: $300 Million | Leading investors: World Bank (Nigeria Electrification Project)**

### 5. SunCulure - $74 million (Agriculture & AgTech)

**About:** SunCulture, based in Kenya, provides solar-powered irrigation systems to smallholder farmers. Its "Pay-As-You-Grow" financing model makes irrigation affordable, boosting food security and farmer incomes while cutting fossil fuel dependence.

**Fund:** SunCulture recently raised $4 million from British International Investment (BII) and $5 million from WaterEquity's Water & Climate Resilience Fund to expand its solar-powered irrigation and carbon financing model. These added to its $12 million Series B (part of a larger USD 27.5 million raise), bringing its cumulative funding to about $74 million.

**Total 2025 funds raised: $9 Million | Leading investors: BII + WaterEquity**

From solar home systems reaching millions of households to solar irrigation transforming farming, these companies show how finance and innovation are scaling Africa's sustainability frontier. Together, they represent over $2 billion in committed investment — a clear sign that Africa's green transition is accelerating.

# Op-Ed:

# From Policy Papers to Production Lines: Africa's Climate Action Must Leave the Boardroom


► **John O. Isiekwene**
*Sustainability Consultant*


Last month, the African Development Bank (AfDB) announced its largest-ever climate financing package committing billions toward green infrastructure across the continent. Yet as I sat in yet another sustainability conference in Lagos, listening to eloquent speeches about carbon neutrality and renewable energy targets, a troubling pattern emerged: the same companies applauding these announcements were quietly postponing their own decarbonization timelines, citing "market conditions" and "technical challenges."

Africa's climate policies will only succeed when they translate into measurable changes on factory floors, supply chains, and industrial operations—not just in corporate sustainability reports.

This disconnect between policy ambition and industrial reality threatens to undermine Africa's unique opportunity to lead global climate action while driving economic growth. As the continent industrialises, it faces a choice: repeat the carbon-intensive development path of other regions, or pioneer a new model that proves environmental responsibility and economic progress can advance together.

The stakes couldn't be higher. Africa contributes less than 4% of global greenhouse gas emissions yet bears disproportionate climate impacts, from devastating floods in Nigeria to prolonged droughts across the Horn of Africa. But this positioning also creates unprecedented leverage. International climate finance is flowing toward African projects at record levels, clean energy costs have plummeted below fossil fuel alternatives in many markets, and global supply chains are actively seeking sustainable sourcing partners.

The evidence is already emerging across sectors. In Kenya, manufacturers report 15-30% energy cost reductions after switching to solar power, according to industry studies. South African mining companies implementing water recycling systems have cut operational costs while meeting environmental standards. Moroccan agricultural cooperatives using precision irrigation techniques have increased yields while reducing water consumption by significant margins. These aren't isolated success stories—they represent a growing pattern of businesses discovering that climate action often improves their bottom line.

Critics argue that immediate climate action is a luxury Africa cannot afford, pointing to urgent development needs and competitive pressures from cheaper, carbon-intensive alternatives. This argument misses a fundamental shift in global markets. Companies that delay climate action today will face steeper costs tomorrow as carbon pricing expands, supply chain requirements tighten, and consumer preferences evolve. More importantly, many climate solutions—from energy efficiency to waste reduction—generate immediate cost savings that can fund further improvements.

The path forward requires moving beyond aspirational commitments to concrete implementation frameworks. Based on patterns observed across African industries, successful climate action follows a predictable sequence: measurement, optimization, innovation, and scaling.

Measurement starts with establishing baseline emissions and resource usage across operations. This doesn't require expensive consultants or complex software—simple tracking of energy consumption, waste generation, and water usage provides the foundation for improvement. Companies should focus on the 80/20 rule: identifying the 20% of activities that generate 80% of environmental impact.

Optimization involves implementing proven efficiency measures that typically pay for themselves within 18-36 months. LED lighting retrofits, equipment maintenance schedules, and process improvements often yield immediate returns while reducing environmental footprint. These quick wins build internal confidence and generate funds for larger investments.

Innovation emerges when companies begin adapting solutions to local contexts. African businesses excel at this stage, developing creative approaches that address resource constraints while meeting environmental goals. Solar-powered cold storage for agricultural products, biogas systems using organic waste, and rainwater harvesting integrated with manufacturing processes represent uniquely African innovations.

Scaling happens when successful pilots expand across operations and inspire industry-wide adoption. This stage often involves partnerships between companies, suppliers, and communities to create sustainable ecosystems rather than isolated projects.

Consider a mid-sized textile manufacturer in Ghana that began with simple energy monitoring, discovered that 40% of electricity use occurred during non-production hours, implemented automated shutdown systems, and saved enough money to invest in solar panels that now power 60% of operations. Within three years, they've become a preferred supplier for international brands seeking sustainable sourcing partners, growing revenue by 25% while cutting emissions by 35%.

However, this transition must address equity concerns that risk being overlooked in the rush toward industrial decarbonization. Climate policies that increase costs for small businesses while benefiting larger corporations will exacerbate existing inequalities. Successful implementation requires deliberate inclusion of small and medium enterprises, women-led companies, and rural communities in climate solutions.

This means designing financing mechanisms beyond traditional banking relationships, providing technical assistance in local languages, and creating market incentives that reward sustainable practices regardless of company size. It also requires recognizing that climate action in Africa must simultaneously address poverty, food security, and social development, not treat them as competing priorities.

The time for action is now, but it must be the right action. By year-end, business leaders should commit to specific, measurable targets: 20% energy intensity reduction, 50% waste diversion from landfills, or 30% water usage optimization. Policy makers should establish clear timelines for carbon pricing mechanisms and renewable energy procurement requirements.

More importantly, we need new metrics for success. Instead of only tracking policy announcements and funding commitments, let's measure implementation rates, job creation in green industries, and the percentage of small businesses adopting sustainable practices. Success should be visible in reduced utility bills, cleaner air quality, and communities thriving around sustainable enterprises.

Africa has the opportunity to show the world that climate action and economic development are not just compatible, they're inseparable. But only if we stop talking and start building. The continent's future depends not on the elegance of our policies, but on the effectiveness of our implementation. The question isn't whether Africa can afford to act on climate change; it's whether we can afford not to, and whether we'll act decisively enough to lead rather than follow.

The following development bank announcement should celebrate not new funding commitments, but measurable reductions in industrial emissions, documented improvements in resource efficiency, and growing networks of sustainable businesses across the continent. That would be a speech worth applauding.

# Climate and Sustainability Events 2025

## OCT 08-09

**UNFCCC AI FOR CLIMATE ACTION FORUM** (HYBRID)

**Location:** Dar es Salaam, Tanzania
**Website:** indico.un.org/event/1019271/

## OCT 12-15

**NORTH STAR GREEN IMPACT**

**Location:** Dubai, UAE
**Website:** expandnorthstar.com/north-star-green-impact

This is for founders solving real-world sustainability challenges — from clean energy and circular economy to agri-tech, water innovation, and decarbonization. Whether you're pre-seed or Series A, this is where you meet the investors, corporates, and climate leaders who can help take your impact global.

## OCT 13-17

**2ND AFRICA SKILLS WEEK**

**Location:** Addis Ababa, Ethiopia
**Website:** www.skills.education-au.org

Hosted by the African Union Commission, through its Department of Education, Science, Technology and Innovation (ESTI), in collaboration with the Government of the Federal Democratic Republic of Ethiopia - Ministry of Labour and Skills, this is a continental platform dedicated to advancing Africa's skills transformation agenda.

## OCT 14-15

**AFRICA CLIMATE FORUM (ACF 2025)**

**Location:** Shehu Musa Yar'Adua Centre, Abuja, Nigeria
**Website:** africaclimateforum.com

## OCT 15-16

**SUSTAINABILITY AND ESG AFRICA CONFERENCE AND EXPO**

**Location:** Sandton Convention Centre, Johannesburg, South Africa
**Website:** esgafricaconference.com

The conference's core theme, "Adapt. Innovate. Succeed - Driving Sustainability in Changing Times" underscores the essential role that leaders play in ensuring their organisations align with ESG principles and integrate them into their overall strategy.

## OCT 15-17

**BLUE EARTH SUMMIT**

**Location:** Woolwich, London, UK
**Website:** blueearthsummit.com

The Summit is a three-day sustainability and innovation gathering in London, uniting leaders, startups, investors, and changemakers and its focus is on climate solutions, green finance, technology, and community-driven impact to accelerate people and planet-positive transformation.

## OCT 23

### Sustainability Table Series 2025

**Location:** Lagos, Nigeria
**Website:** bit.ly/4gmZCYf

The 9th edition of the sustainability table series explores sustainability in action: scaling impact for a thriving future to achieve the SDGs

## OCT 28-31

### THE LUANDA FINANCING SUMMIT FOR AFRICA'S INFRASTRUCTURE DEVELOPMENT

**Location:** Chicala Conference Centre, Luanda, Angola
**Website:** au.int/en/newsevents/20251028/luanda-financing-summit-africas-infrastructure-developmen

The gathering is part of the broader continental effort to unlock investments and partnerships in support of the African Union's Agenda 2063 infrastructure aspirations under the framework of Programme for Infrastructure Development in Africa (PIDA).

## OCT 30-31

### SUSTAINABILITY WEEK AFRICA

**Location:** The Westin, Cape Town,South Africa
**Website:** events.economist.com/sustainability-week-africa/

The 2nd annual Sustainability Week Africa is a business and investment event focused on helping the continent become sustainable faster while avoiding the worst impacts of climate change. With a focus on business, the two-day conference will convene pan-African and global leaders to focus on action, while driving investment into green projects.

## NOV 10-21

### COP30: UN CLIMATE CHANGE CONFERENCE

**Location:** Belém, Brazil
**Website:** unfccc.int/process-and-meetings/conferences/un-climate-change-conference-belem-november-2025/the-road-to-belem

This landmark event gathers nations, NGOs, and stakeholders to tackle the climate crisis. It's a unique platform to negotiate solutions and assess progress on climate goals while highlighting the region's ecological significance.

## NOV 22-23

### G20 SUMMIT 2025

**Location:** Johannesburg, South Africa
**Website:** g20.org

The Group of Twenty (G20) is an international forum of both developing and developed countries which seeks to find solutions to global economic, climate and financial issues, the summit is set to shape international sustainability commitments

## NOV 22-23

### ESG AND CLIMATE AFRICA SUMMIT

**Location:** Trademark Hotel, Nairobi, Kenya
**Website:** .leadventgrp.com/events/esg-and-climate-africa-summit/details

The ESG and Climate Africa Summit convenes leaders, investors, and sustainability experts to advance ESG integration and sustainable development. Through keynotes, panels, workshops, and networking, attendees explore global trends, frameworks, and strategies to tackle environmental and societal challenges across Africa and beyond.

## DEC 08-12

### 7th Session of the United Nations Environment Assembly (UNEA-7)

**Location:** Nairobi, Kenya
**Website:** unep.org/environmentassembly/unea7

The ESG and Climate Africa Summit convenes leaders, investors, and sustainability experts to advance ESG integration and sustainable development. Through keynotes, panels, workshops, and networking, attendees explore global trends, frameworks, and strategies to tackle environmental and societal challenges across Africa and beyond.

# Data & Research Insight:

## Advancing Nigeria's Recycling System through Informal Sector Integration and Source Segregation

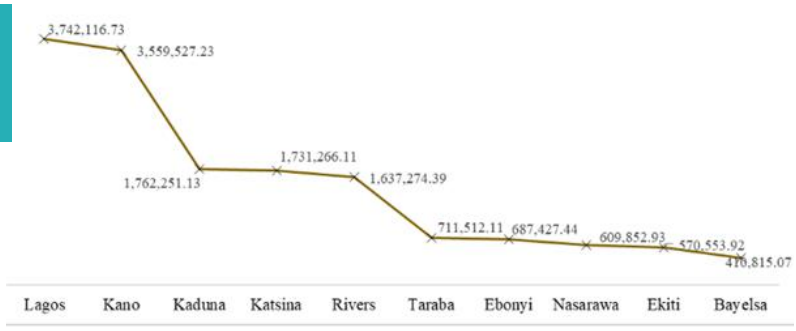

► **FAITH OSAMAYE**
*Research Associate, AR Initiative*


### Introduction

Nigeria faces a surge in waste generation, producing at least 32 million tonnes of solid waste annually , a figure projected to rise to 107 million tonnes by 2050 . Of this waste, only about 30% is collected, sorted and disposed of correctly, while a significant share of about 70% of plastics ends up in landfills, waterways, and drainage systems, highlighting the absence of an efficient waste management system .

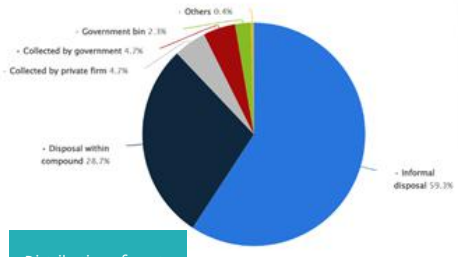
Waste generation varies significantly across states. Lagos, the country's commercial hub and most densely populated state, leads the way, producing an estimated 3.74 million tonnes annually. In contrast, less urbanised and less industrialised states, such as Bayelsa, Yobe, and Taraba, generate between 410,000 and 700,000 tonnes per year .

Solid waste generation in Nigeria




Despite the growing waste challenge, recycling in Nigeria remains minimal, with less than 10% of plastic waste recycled . This untapped potential deprives the country of the environmental and economic benefits the waste could generate through a circular economy approach , where resources are continually reused, waste is minimised, and energy is conserved . Globally, recycling has proven to be a significant employer, with the U.S. Environmental Protection Agency reporting that the recycling industry generated 681,000 jobs in 2017 .

In Nigeria, however, the recycling landscape is dominated by the informal sector, which serves as the backbone of waste collection and recovery. Estimates indicate that informal waste pickers account for about 59.3% of the waste collected nationwide .




Distribution of waste disposal in Nigeria

Yet, despite their critical role, reliance on this unstructured system contributes to inefficiencies in recycling supply chains. Recycled plastic supply meets only about 6% of demand , leaving a significant gap between waste generation and resource recovery.

### The Informal Waste Sector

Nigeria's informal waste sector is made up of scavengers, dump-site buyers, cart pushers, and waste merchants , known by various names across the country. In the north, they are called Baban-bola or yan gwangoni, meaning "iron collectors," while in Lagos and other parts of the southwest, they are known by names such as Omo bonla and Kole kole . For many, these activities are a primary source of livelihood. In developing countries, an estimated 2% of the population relies on informal waste picking for income, often driven by poverty and high unemployment rates .

Waste pickers play a central role in Nigeria's recycling value chain. They collect, sort, and in some cases, process recovered waste before selling it to recycling companies. The formal and informal systems are deeply intertwined; recyclers often source directly from waste pickers or engage informal cooperatives to gather materials . This makes the informal sector the backbone of recycling operations in the country. While formal waste management involves government agencies and licensed private companies for collection, transportation, and disposal, most recycling in Nigeria is carried out by informal workers operating outside official recognition. Their lack of legal status creates a controversial situation: they fill a critical role in resource recovery, yet work under unsafe and unhygienic conditions, exposing themselves to occupational hazards . More importantly, the absence of formal oversight and standardised practices often affects the quality, consistency, and efficiency of materials supplied to recycling companies.

In India, the city of Pune provides a compelling example of how the informal sector can be integrated into formal waste management. Waste pickers there, once working in unsafe conditions, formed the Kagad Kach Patra Kashtakari Panchayat (KKPKP) in the 1990s to demand recognition. By 2005, they partnered with the Pune Municipal Corporation to launch a door-to-door segregated collection. Today, through the SWaCH cooperative, over 2,300 waste pickers serve more than 400,000 households. The model improved working conditions, ensured compliance with national regulations, and highlighted how local authorities can act as facilitators rather than sole service providers.

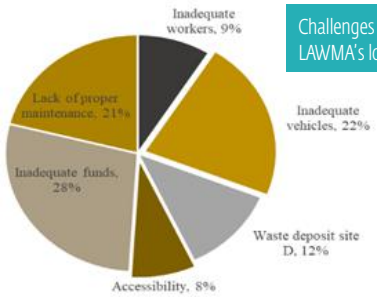

The informal waste worker pyramid

System Recycling Gaps in Nigeria

Waste management in Nigeria faces fundamental structural challenges that limit the country's ability to recycle effectively. One of these is that the overall system is primarily designed for disposal rather than recovery, with most waste being transported directly from the source to landfills or dumpsites. Recycling companies often rely on informal waste pickers to supply materials because the formal collection process rarely incorporates segregation at the source. This dependency produces low-quality secondary materials and insufficient recycling infrastructure, which raises processing costs and slows the recycling process.

Secondly, household participation in waste segregation is a pressing issue. Most waste generated from homes is mixed , which lowers the quality of recyclables and makes recovery more labour-intensive for collectors and processors. The absence of a widespread, structured collection system, combined with limited public awareness, means that segregation often occurs after disposal. Even where formal waste collection exists, such as in Lagos, the sector faces challenges in managing waste from the point of collection and transportation to disposal . The state government acknowledged in 2018 that the volume of waste generated far outweighed the official figure of 13,000 tons per day, making timely evacuation and processing difficult .

Weak logistics compounds these problems. The formal waste collection system is not well established across states, and where it exists, delays in evacuation are common. In many cities, waste is collected by cart pushers or informal collectors for a small fee, with some roaming the streets to gather metals, plastics, and other recyclables for sale to middlemen or directly to recycling companies . Poor transportation infrastructure and irregular collection schedules limit the volume and quality of recyclables that can be recovered. In Lagos, for example, the Lagos Waste Management Authority (LAWMA) reports that inadequate vehicles account for approximately 22% of its operational challenges, while accessibility issues make up 8%, both of which directly hinder timely waste evacuation and material recovery .




Challenges of LAWMA's logistics

The informal sector faces similar constraints, as waste pickers and cart pushers often have to go door-to-door to collect materials, spending significant time and resources navigating poor road networks and hard-to-reach neighbourhoods.

Another pressing challenge is the inadequate provision of Material Recovery Facilities (MRFs). Municipal solid waste recycling in Nigeria is still at an early stage, particularly in Lagos , similar to the development patterns once seen in countries like Thailand and Malaysia . Although the concept of MRFs exists in Lagos, recycling and resource recovery as forms of municipal solid waste diversion have not received the required attention from government or waste management authorities in the past or present. As a result, the majority of recycling activities are carried out by the informal sector, whose workers often gather substantial volumes of recyclables but lack the infrastructure to process them effectively. Without functional Material Recovery Facilities (MRFs), much of the material collected is either burnt, abandoned, or sent back to landfills, undermining its potential economic and environmental value .

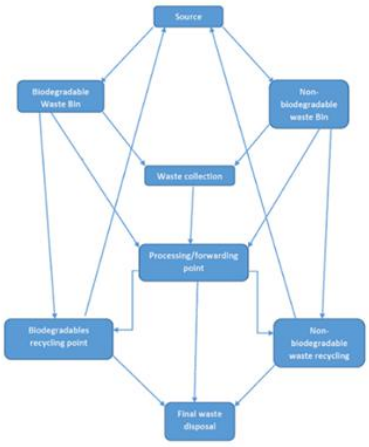
These three factors combined keep Nigeria's recycling rate below 10% , with the bulk of recovery driven by the informal sector. By contrast, countries such as Germany, with a recycling rate of 47%, achieve this through

strict household-level segregation laws that ensure a steady supply of clean materials. The United Kingdom, at 26.2%, demonstrates how having separate material bins combined with reliable municipal logistics keeps the value chain efficient . Slovenia, with 55.3%, shows the impact of legislative amendments and the establishment of municipal waste management centers, which together have enabled widespread access to Material Recovery Facilities (MRFs) and transformed the country's recycling industry, making it one of the European leaders in municipal waste recycling . These points show that when segregation, logistics, and infrastructure work seamlessly together, recycling rates can rise dramatically .

Nigeria can replicate these successes by encouraging households to sort their waste, addressing the gaps in waste collection and transportation, and expanding modern recycling facilities. Taking these steps would ensure significantly more resource recovery.

### Global Benchmarks in Waste Management

Numerous countries globally present examples of structured, technology-enabled, and community-driven approaches to municipal solid waste (MSW) management, with results that Nigeria's system could emulate. In Italy, for example, waste management begins at the source, where households are required to separate biodegradable waste from recyclables before collection, prioritising recycling as the most sustainable MSW practice, both environmentally and for public health .
The schematic below illustrates a typical source-segregation process, showing how waste is divided into biodegradable and non-biodegradable streams before it moves on to treatment and recycling.

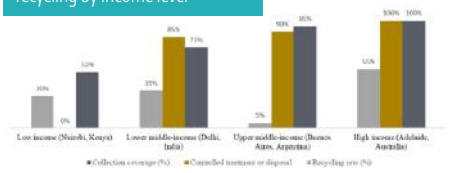



Sustainable solid waste management schematic.

Many high-income countries have gone further by embedding technology into their systems. In Italy and parts of Europe, web-based Geographic Information Systems (GIS) track waste from collection to disposal, achieving up to 80% efficiency . Other technologies include sensor-equipped bins that alert collectors when they are full, compact garbage trucks designed for congested streets, and multi-compartment bins that simplify household segregation. In Japan, automatic bottle sorting systems shred and process glass for remanufacturing, while in Europe, mechanical-biological treatment reduces waste volume before final disposal. Even biodegradable plastics, capable of degrading by 90% in three months, have been developed to address plastic pollution .

Around the world, how well cities manage waste often depends on income levels, infrastructure, and enforcement. In Adelaide, Australia, both waste collection and safe disposal reach 100%, with over half of the waste recycled. Buenos Aires collects almost all its waste and disposes of most safely, yet recycles only 5%. Delhi collects three-quarters of its waste and recycles 35%, while Nairobi collects just half, has no safe disposal, and recycles barely 3% .

Waste collection, treatment, and recycling by income level




These disparities demonstrate that while technology and innovation are important, the true foundation of effective waste management lies in strong governance, reliable infrastructure, and active community participation. If Nigeria can bring these elements together, as seen in top-performing cities, it can move from a disposal-driven system to one where recovery and recycling are at the core.

### Policy Gaps and Opportunities

Policies and governance are central to shaping Nigeria's waste management system. Existing frameworks date as far back as the Federal Environmental Protection Agency Act of 1992 and include more recent measures such as the National Environmental Regulation (2011) . In 2020, the Federal Government introduced two key national policies, one on solid waste management and another on plastics lifecycle management, supported by UNIDO. The same year, Nigeria joined the World Economic Forum's Global Plastic Action Partnership and established a Circular Economy Working Group to advance efforts against plastic pollution .

These policy steps align with the government's recognition, alongside the UNDP Imagine Nigeria team, that the green economy in Nigeria holds an estimated $250 billion investment potential. Harnessing this potential could reduce unemployment, create new industries, and support environmental sustainability .

However, unlocking these benefits requires targeted investment in recycling infrastructure, enforceable regulations, and widespread public awareness campaigns. Laws that require waste to be sorted at the source, along with tax breaks or subsidies for companies using circular economy practices, can encourage more businesses to get involved. Strong partnerships between government, private companies, and NGOs can also close existing gaps and bring in the expertise needed to make recycling work at scale .

While a handful of companies, such as Coca-Cola's recycling initiatives, and the vast network of informal recyclers already contribute to recovery efforts, these activities remain limited in scale . Strengthening governance, streamlining collaboration between local, state, and federal agencies, and embedding circular economy principles into all levels of planning can help Nigeria transition from a disposal-focused system to a value-driven resource economy.

### Call to Action: From Waste to Wealth

Globally, nations that have achieved high recycling rates combine strong policy enforcement with effective infrastructure, public participation, and consistent funding. If Nigeria adapts these lessons, while leveraging its vibrant informal sector, it can turn its 32 million tonnes of annual solid waste from a challenge into a thriving economic opportunity. Achieving this will require not only stronger enforcement of existing policies and investment in modern recycling infrastructure, but also inclusive recognition of informal waste workers as essential partners and decisive action to tackle the persistent problem of waste segregation.

# Financing the Future:

## Artificial Intelligence's Complex Relationship with Sustainability

► NATASHA OGELI
*Student Writer*

In the classic Dr Jekyll and Mr Hyde, Robert Louis Stevenson illustrates the dual nature of human beings and our struggle between creation and destruction. This article presents that our relationship with Artificial Intelligence reflects a similar tension. Like Dr Jekyll and Mr Hyde, Artificial Intelligence has two faces: a good one that gives us powerful tools to tackle climate issues, and another one that actively contributes to the climate crisis we face. In the book, Dr Jekyll is a well-meaning and brilliant doctor who has a dark alter-ego called Mr Hyde. Mr Hyde grew stronger every time he gave in to his desires. AI has its own Mr Hyde, an insatiable hunger for data, energy, and water.

Training a meaningful AI model demands huge amounts of data. Every photo, video, and text that is used to "teach" an algorithm must be stored and processed, and this requires vast networks of data centres. Data centres already consume 2–3% of global electricity. The data centres in the United States of America alone used over 4% of the nation's power in 2023 and emitted more than 105 million tonnes of $CO_2$.

Running and using AI models only magnifies this demand. A single ChatGPT query requires almost ten times more energy than a standard Google search. AI workloads are projected to account for 10–20% of all data centre electricity use, and by 2030, global data centre consumption could more than double, with AI as a key driver of this surge.

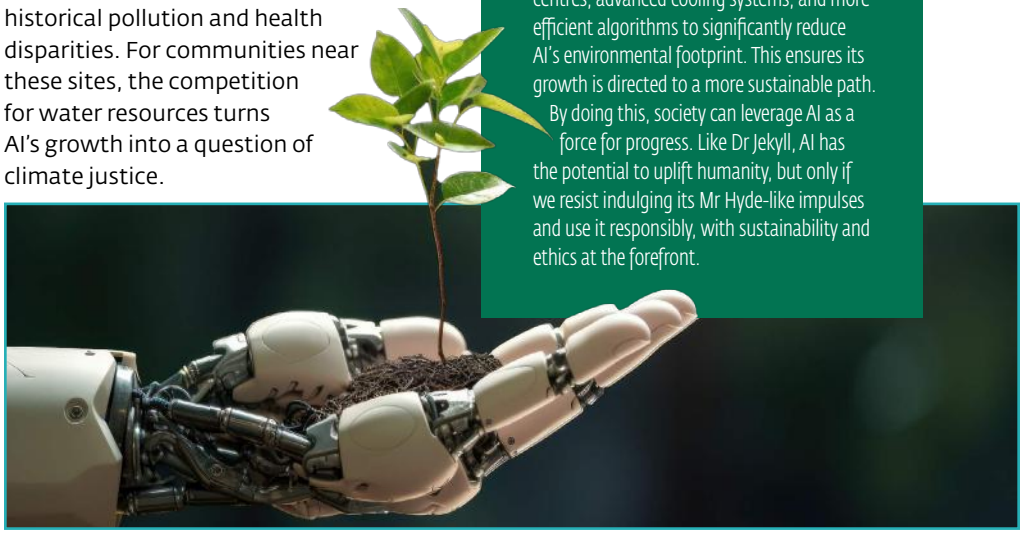
AI's thirst is equally alarming. Data centres rely heavily on water to cool the computers when they heat up. They consumed nearly 1.1 million cubic meters every single day in 2022, and the figure is expected to rise to 1.7 million cubic meters per day by 2025. To put this in perspective, a single 100-megawatt facility can use up to 2 million litres of water daily, enough to supply roughly 6,500 households.

Tech giants are already reflecting this trend. In 2024, Google's data centres alone used 8.1 billion gallons of water, nearly double what they consumed just three years earlier.
In Memphis, xAI's "Colossus" supercomputer, which powers Grok (the AI used on X, formerly known as Twitter), is placing intense pressure on local water supplies. The facility pulls about one million gallons of water per day from the Memphis Sand Aquifer, which is approximately 3% of the aquifer's total capacity. The Aquifier supplies drinking water to residents. Environmental advocates warn that this rate of extraction is risky, as it may pull contaminants like arsenic downward and threaten the quality of the city's clean water supply. The situation is particularly worrisome in Boxtown, a predominantly Black neighbourhood in South Memphis, which is already overburdened by historical pollution and health disparities. For communities near these sites, the competition for water resources turns AI's growth into a question of climate justice.

On the other hand, AI is also Dr Jekyll. This is the brilliant and well-intentioned doctor who uses his gifts and brilliance for the good of society. AI has already shown it has the potential to accelerate solutions to climate change. It can be used to save energy and reduce costs. It can also predict extreme weather events and assist in the optimisation of renewable energy grids. For example, Google's DeepMind cut down on the energy used for cooling its data centres by 40%. AI is also used in satellite monitoring, which helps track deforestation and illegal fishing in real time. In agriculture, AI-powered systems are assisting farmers to use water more sparingly while also increasing crop yields. These applications show that when developed and used responsibly, AI is capable of serving as an important ally in sustainability.

The current model of artificial intelligence is unsustainable in the long term if unregulated. The challenge we have is not to abandon the use of Artificial Intelligence, but to reimagine how we build, deploy and use it. We should moderate its applications and prioritise high-impact uses like climate action, medicine and education. We should also invest in greener infrastructure like renewable-powered data centres, advanced cooling systems, and more efficient algorithms to significantly reduce AI's environmental footprint. This ensures its growth is directed to a more sustainable path.

By doing this, society can leverage AI as a force for progress. Like Dr Jekyll, AI has the potential to uplift humanity, but only if we resist indulging its Mr Hyde-like impulses and use it responsibly, with sustainability and ethics at the forefront.



# Turning Waste into Light: How Waste2Light is Powering Africa's Clean Energy Future

At 13 years old, I built my first LED lamp from discarded materials, driven by my frustration of growing up in a community in Nigeria with little to no electricity. That spark of innovation lit a lifelong passion in me to help solve Africa's energy crisis.


**EMMANUEL ABAH**
*CEO, Was te2Light*


In 2022, I founded Waste2Light Ltd, a renewable energy social enterprise based in Minna, Niger State, Nigeria. Waste2Light manufactures affordable wind turbines from recycled plastic waste to tackle two urgent problems: energy poverty and plastic pollution. My background in experimenting with LED lamp design helped shape my innovation journey and fuel my passion for transforming waste into hope for local communities, inspiring my entrepreneurial journey.

As a child, I dreamt of studying Mechatronics Engineering, but instead, I pursued a degree in Educational Technology at FUT Minna, where I am currently in my fourth year. Here, I began experimenting with renewable energy prototypes, salvaging materials from scrapyards and using 3D printing to build turbines. The biggest risk was designing and testing turbines with limited resources, utilising scrapyard magnets, salvaged copper, and 3D printing technology. Although unproven, today that risk paid off; we secured a patent in Nigeria and began working to prove that local, low-cost turbines can power rural homes sustainably.

Unlike imported turbines, our turbines are 25–40% cheaper, moisture-resistant, optimised for Nigeria's low-wind conditions, and made locally from recycled plastic.

Nigeria's grid is unreliable, especially in rural areas. Our turbines provide off-grid clean energy at a fraction of


the cost of diesel generators, reducing emissions and dependency on fossil fuels. Our process begins with the processing of recycled plastic, followed by the manufacture of moulds and 3D-printed blades. We integrate salvaged neodymium magnets and copper coils into the generator, assemble the turbine tower, and test its performance under simulated low-wind conditions. Each turbine we build removes up to 70kg of plastic waste and offsets 1.5 tons of $CO_2$ annually, tackling both pollution and energy poverty.

**Key features and benefits of our system include:**

- Affordable & 40% cheaper than imports
- Moisture & algae resistant – suitable for waterlogged areas
- Low-wind optimisation for Nigerian conditions
- Local parts availability & quick maintenance
- Eco-friendly – made from recycled plastic

Our turbines currently range from 250W to 3kW, with an efficiency of 85–90%. They use pure sine wave inverters optimised for rural loads, are compatible with LiFePO4 & AGM batteries, and come with a one-year warranty plus after-sales support. Innovation is at the core of our work; we are developing a hybrid wind-hydro microgrid system to serve larger communities and small businesses. We are also investing in IoT-enabled turbines for real-time monitoring and exploring AI-driven efficiency tools.
We also provide local maintenance and training, ensuring community ownership and sustainability. We have trained over 40 young people in recycling, coding, and renewable energy, while empowering women. We employ local technicians, support final-year students at FUT Minna, and launched assistive innovations, such as the Waste2Light Stick, for visually impaired learners. Despite funding constraints and regulatory hurdles, we relied on innovation, partnerships, and grants. Starting small with scrap materials reduced costs.

**Over the years, some of our milestones include;**

- Securing a patent for our turbine design
- Installing turbines for LAUTECH final-year projects
- Training 40+ youths, including 3 women, and hiring 2 staff full-time
- Building and testing 10+ turbines with early customers
- Diverting tons of plastic waste from landfills
- Helping households save 30–50% on energy costs
- Winning awards, including the Young Innovative Builder Award, Ugwumba Enterprise Challenge, and recognition at Energy Week SPE FUTMinna

This bold approach has earned me and my team recognition across Africa. In 2025, I was selected as one of 70 innovators out of 4,000 applicants for the African Union Climate Innovation Summit in Addis Ababa. Waste2Light is also backed by partners including TotalEnergies, Tony Elumelu Foundation (TEF), Project i2M (UKAid), the Nigeria Wind Energy Council, FUT Minna, and the Niger State Ministry of Environment. On July 1st, 2025, we launched our first factory in Minna—a major milestone in our journey.

To date, we have raised $10,000, but we are targeting $250,000 to commercialise and scale production fully. The vision is clear: to power over 5 million people across Nigeria and expand into Ghana, Kenya, Rwanda, Senegal, and Sierra Leone. Through strategic partnerships with NGOs, cooperatives, and rural electrification agencies, we plan to expand to Ghana, Kenya, Rwanda, Senegal, and Sierra Leone in the coming years.

At Waste2Light, waste is not the end, but the beginning of light. With persistence, vision, and resilience, we can build a future where every African community has access to clean energy.

Student Article:

# From Fields to Bottles: A Fresh Approach to Reducing Post-Harvest Losses and Its Climate Decline.


**Ruth Ainembabazi Nafula**
*Data Analytics & Statistics Advocate*


Vegetable waste is a silent but powerful climate threat that affects everything from African farms to kitchens around the world. Tons of produce spoil every day before they can be eaten, wasting valuable resources and emitting dangerous greenhouse gases. One climate-smart solution with potential to reduce emissions, save agricultural inputs, and create new value for both households and farmers is turning excess vegetables into juice.

Food waste is not just an ethical or financial concern; it contributes significantly to the climate crisis. Roughly 8% of greenhouse gas emissions worldwide are caused by food waste (Materu et al.). Methane accounts for about half of these emissions, followed by carbon dioxide at 34% and nitrous oxide at 16%.

In sub-Saharan Africa, post-harvest vegetable losses can exceed 50% (Food and Agriculture Organisation). This is an economic burden for farmers and an environmental crisis that is often overlooked. A practical and scalable approach to reducing food waste is transforming surplus vegetables into fresh, nutrient-rich juices before they spoil.

Vegetables rank among the most perishable crops. Leafy greens, such as spinach and kale, can spoil within forty-eight hours without refrigeration, while tomatoes and carrots last slightly longer but still face rapid deterioration in hot climates. The African Postharvest Losses Information System notes that inadequate preservation methods are a leading cause of this waste. Every kilogram of spoiled produce represents not only lost food but also the greenhouse gases embedded in its production.

While farm-level losses dominate headlines, a large portion of the climate impact from wasted vegetables occurs after purchase in our own kitchens. The United Nations Environment Programme's Food Waste Index Report 2021 reveals that 61% of global food waste comes from households (United Nations Environment Programme). In Kenya, the same report, alongside findings from the Waste and Resources Action Programme, shows that the average person discards about ninety-nine kilograms of food each year. Farm Africa estimates that food loss and waste cost Kenya approximately Ksh 72 billion (£0.48 billion) annually (Farm Africa). Vegetables are frequent casualties, discarded when they wilt, soften, or expire before cooking. The environmental impact mirrors that of farm losses: wasted agricultural inputs and methane emissions from decomposition.

Household juicing offers a simple yet effective solution. Overripe tomatoes, limp carrots, or wilting spinach can be blended into tasty drinks, refrigerated for days, or frozen for weeks, turning waste into value.

**Juicing surplus vegetables delivers three major sustainability benefits:**

- It prevents methane emissions from decomposing produce.
- It maximises the return on water, fertiliser, and energy used in farming.
- It opens alternative markets during climate-driven gluts.

When powered by renewable energy such as solar, the environmental footprint of processing becomes even lighter .

The basic juicing process is straightforward: sort and wash produce to remove damaged items and contaminants; chop and blend for juice extraction; press to separate juice from pulp; pasteurise to ensure safety and extend shelf life; and finally, bottle and seal in sterile containers. Small-scale juicing can be done at home or in farmer cooperatives, while larger facilities can supply regional markets. In Ghana's Ashanti Region, for example, a tomato farmers' cooperative supported by a local NGO established a juicing plant. Within one year, they cut tomato losses by 70% and secured supermarket contracts. The initiative created jobs especially for women and reduced methane emissions from spoiled produce.

Properly processed vegetable juices retain much of their nutritional value. A study found that pasteurised carrot juice stored under refrigeration maintained over 80% of its beta-carotene content after three months (Sonar et al.). When blended with fruits, these juices can also boost vitamin C levels, improving nutrient absorption and consumer appeal. For households, juicing can increase vegetable consumption, addressing both waste reduction and nutrition challenges (Liu et al.).

Despite its benefits, large-scale juicing faces some challenges such as ensuring food safety through proper training, covering the costs of commercial equipment, and understanding markets well enough to generate steady demand. These barriers can be addressed through cooperative ownership, government subsidies, and partnerships with NGOs or private enterprises. Linking juice production to institutional buyers such as schools and hospitals can ensure consistent sales.

Juicing is more than a creative use for leftover vegetables; it is a practical climate action strategy. By preventing waste, conserving resources, and creating resilient livelihoods, it addresses both environmental and economic sustainability. Scaling up this practice across farms, markets, and households could significantly reduce food-related emissions while improving food security.

From field to bottle, vegetable juicing transforms waste into value, emissions into avoidable harm, and fragility into resilience. Whether on a farm or in a kitchen, the simple juicer may be one of the most underutilised tools in our fight against climate change.

# FUNDING OPPORTUNITIES

## PRINCE TALAL INTERNATIONAL PRIZE FOR HUMAN DEVELOPMENT - AGFUND

The Prince Talal International Prize for Human Development aims to support the efforts to promote and enhance human development and disseminate successful projects which are improving the living conditions of the poor and disadvantaged, with particular emphasis on women and children. The subject for the 2025 Prize is Affordable and Clean Energy (SDG 7)

**Funding size:** $1,000,000
**Eligible organisations/regions:** UN agencies(e.g WHO, IMF, UNESCO, WIPO, etc), government bodies, international, regional and national NGOs, social business enterprises and individuals.
**Deadline:** 30th January 2026
**Link:** https://agfund.org/Index

## GBIF - BID Programme 2025 (Global Biodiversity Information Facility-Biodiversity Information for Development)

GBIF's BID programme (funded by the European Union DG INTPA) offers grants to strengthen biodiversity data capacity in eligible countries.

**Funding size:** EUR 30,000 - EUR 60,000 (project grants — see the GBIF grants portal for exact amounts per call).
**Eligible organisations/regions:** A long list of African countries is explicitly listed as eligible on the BID Africa page
**Key Oct 2025 date:** Q&A session for BID Africa on 7 October 2025 and deadline for submission 3rd November. The programme also references reserve lists valid to 31 Dec 2026.
**Link:** https://www.gbif.org/news/6r10aNQtkCTx-78IdizV1gw/2025-bid-call-for-proposals-africa

## Global Innovation Lab for Climate Finance - 2025 Call for Ideas / Pre-Seed Capital

Climate Finance Lab (call for market-facing climate finance innovations). The 2025 cycle includes a full application deadline of 12 December and selection activity into late 2025 / early 2026.

**Funding size:** Selected ideas receive intensive acceleration support; the new Pre-Seed Capital Facility can provide grants of USD 150,000 - 250,000 to Lab-endorsed ideas after acceleration.
**Eligible organisations/regions:** The 2025 Lab explicitly includes Southern and East Africa among the target regions for regional selection. Many Lab programmes are accessible to African innovators with marketable climate finance solutions.
**Key Oct 2025 date:** Full application/submission deadline - 12 December 2025 (Call for ideas cycle runs from September to December)
**Link:** https://www.climatefinancelab.org/call-for-ideas/

## The Avery Dennison Foundation Grant

The Avery Dennison Foundation (ADF) is a global funder that supports and builds partnerships with nonprofit/non-governmental organisations in communities across the globe, with an emphasis on geographies of high need. ADF focuses on three impact areas: education access, environmental sustainability, and secure livelihoods.

**Funding size:** Grants typically range from $50,000-$100,000
**Deadline:** On a rolling basis
**Link:** https://www.averydennison.com/en/home/company/avery-dennison-foundation/grantmaking.html

## Water4All Joint Transnational Call for research and innovation projects on "Water and Health"

The Avery Dennison Foundation (ADF) is a global funder that supports and builds partnerships with nonprofit/non-governmental organisations in communities across the globe, with an emphasis on geographies of high need. ADF gives to three impact areas: education access, environmental sustainability and secure livelihoods.

**Funding size:** Grants typically range from $50,000-$100,000.
**Submission deadline of preproposals:** 13 November 2025, 15:00 CET
**Link:** https://www.averydennison.com/en/home/company/avery-dennison-foundation/grantmaking.html

## Africa-UK physics partnership collaborative projects 2025

Funding for collaborative physics projects addressing the challenges of climate change, energy, and capacity building across African economies. You must be based at a UK research organisation eligible for Science and Technology Facilities Council (STFC) funding and have a project co-lead based at an eligible research organisation in Ghana, Kenya, Rwanda, South Africa, Tanzania, or Uganda.

**Funding type:** Grant
**Funding Size:** £3,000,000
**Deadline:** 23rd October
**Link:** https://www.ukri.org/opportunity/africa-uk-physics-partnership-collaborative-projects-2025/

## Draper Richards Kaplan Foundation 2025

DRK Foundation funds early-stage social impact organisations solving the world's biggest social and environmental problems using bold, scalable approaches.

**Funding Size:** Up to $300,000 USD in either unrestricted grant funding or investment capital over a three-year period, usually in multiple tranches
**Eligible Region:** Organisations operating in Africa, Europe, India, and the United States, and in Latin America in select situations.
**Deadline:** Rolling basis
**Link:** https://www.drkfoundation.org/apply-for-funding/what-we-fund/

## UNICEF Venture Fund - Call for Open Source Frontier Tech Solutions

The UNICEF Venture Fund is looking to invest in open-source frontier technology solutions that have the potential to create radical change for children.

**Funding Size:** Up to US$100K in equity-free funding for early-stage, for-profit technology startups
**Eligible:** Companies registered in one of UNICEF's programme countries that have impressive working prototypes and a commitment to Open Source licensing and practices.
**Deadline:** 30th November 2025
**Link 1:** https://form.jotform.com/251323971624355
**Link 2:** https://www.unicefventurefund.org/apply-funding

## UNICEF Climate Innovation Challenge

Through the Climate Innovation Challenge, the UNICEF Venture Fund will identify, recognise and support innovators developing scalable solutions to protect children's health and build long-term resilience of the systems they depend on for their well-being.

**Funding Size:** Unknown
**Eligible:** link below to see full criteria
**Deadline:** 21st October 2025
**Link:** https://www.unicef.org/innovation/unicef-climate-innovation-challenge

## GOOGLE - Startups For Sustainable Development

Google's Startups for Sustainable Development program supports a global ecosystem of impact-focused startups. The 17 SDGs are used as the framework for measuring impact. The program is not time-bound, in order to support startups in their mission for long-term impact at scale.

**Funding Size:** The program builds community and supports startups with advisors, funding, and platform technology.
**Eligible:** Have a technology-based product or service with an innovative angle. We are especially interested in startups leveraging AI.
**Deadline:** Not time-bound
**Link:** https://rsvp.withgoogle.com/events/startups-for-sustainable-development

## Whitley Awards 2026 for Mid-Career Conservationists in the Global South

Whitley Awards are for dynamic, mid-career conservationists leading wildlife conservation projects in the Global South. You must be a national of the country in which you are working, seeking to scale up proven work founded on science, that is embedded in the local community and would benefit from further funding, a profile boost and international support.

**Funding Size:** £50,000 GBP in project funding over one year
**Eligible Region:** https://whitleyaward.org/apply-for-conservation-funding/eligibility/
**Deadline:** 31st October 2025
**Link:** https://whitleyaward.org/apply-for-conservation-funding/apply-for-a-whitley-award/

# PODCASTS

YOU SHOULD BE LISTENING TO

## 01

### Sustainability and Climate Podcast

The sustainability and climate podcast hosted by Tobi Aigbogun and Labake Ajiboye-Richard explores sustainability, activism and climate change with a fresh take. Both working in the space, Tobi and Labake host business executives, policy officials and entrepreneurs to discuss practical applications and strategies. The episode with the head of sustainability at Virgin Atlantic, Holly Boyd-Boland, explores virgin atlantic's pioneer approach to sustainability, including flying the first full flight on Sustainable Aviation Fuel and more.


Listen Here


## 02

### Speed & Scale by Ted Climate

The Speed & Scale podcast, hosted by Ryan Panchadsaram and Anjali Grover highlight climate wins gliobally, hosting conversations with the people tackling climate issues efficiently and at scale. Start with the episode on the food ecosystem with Ndidi Okonkwo Nwuneli, who lays out what it would yake to build a more equitable, sustainable food system that nourishes all people.

Listen Here


## 03

### Acquired

Hosted by Ben Gilbert and David Rosenthal, the Acquired podcast explores the story behind your favourite companies. Start with the 2 hour 45 minutes episode on IKEA to learn about the innovative Swedish business started by a 17-year old selling pens grew into the billon dollar empire we know today.

Listen Here


## 04

### The Climate Briefing

The Climate Briefing explores themes in UN climate negotiations and international climate politics with hosts Antony Froggatt and Anna Aberg from Chatham House. Their latest episode on the United States administration's impact on the renewable energy industry is a good place to start.

Listen Here

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

## Contact Us

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