

Plastic to Progress Initiative

A Data-Driven, Culturally Rooted Solution for Lagos' Plastic Crisis

Location: Lagos, Nigeria (Pilot across selected LGAs)

Theme: Environmental Sustainability + Public Service Enhancement.

(Capacity + Technology Challenges)

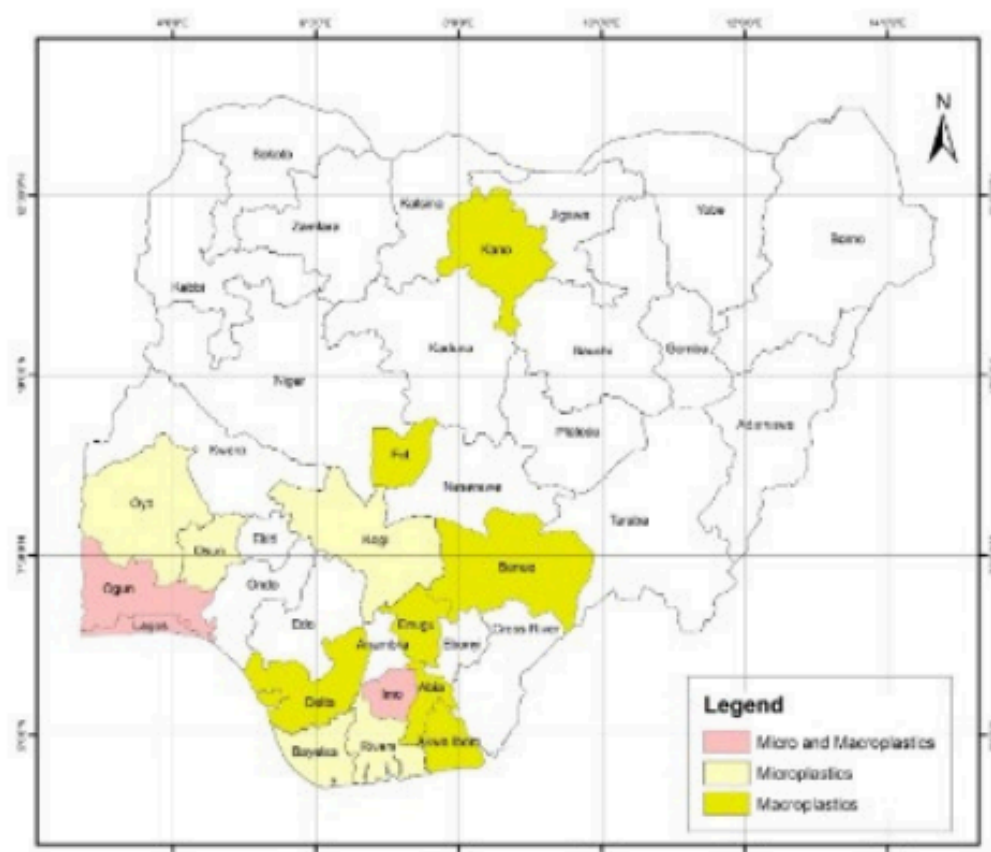
Submission for: OATHE/Youth Impact Challenge Hackathon.

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Executive Summary

The Plastic to Progress Initiative is a state-driven, data-rich concept designed to transform Lagos' plastic waste crisis into a sustainable asset for public service improvements. Rather than offering individual rewards, this model channels revenue generated from recycling plastic waste into a competitive "reward branch" that funds upgrades to public infrastructure (schools, clinics, sanitation facilities) across Lagos Local Government Areas (LGAs). By integrating advanced tracking technologies (blockchain paired with community reporting) with robust partnerships and a clear performance-based incentive system, the initiative aims to collect 50 metric tons of plastic waste in six months, reduce CO₂ emissions by 120 tons, and reinvest in community assets to benefit thousands of citizens and students.

Figure1.0 MAP OF MICRO AND MACRO PLASTIC DISTRIBUTION IN NIGERIA



SOURCE: YALWAJI, JOHN-NWAGWU & SOGBAMU 2022

Problem Statement

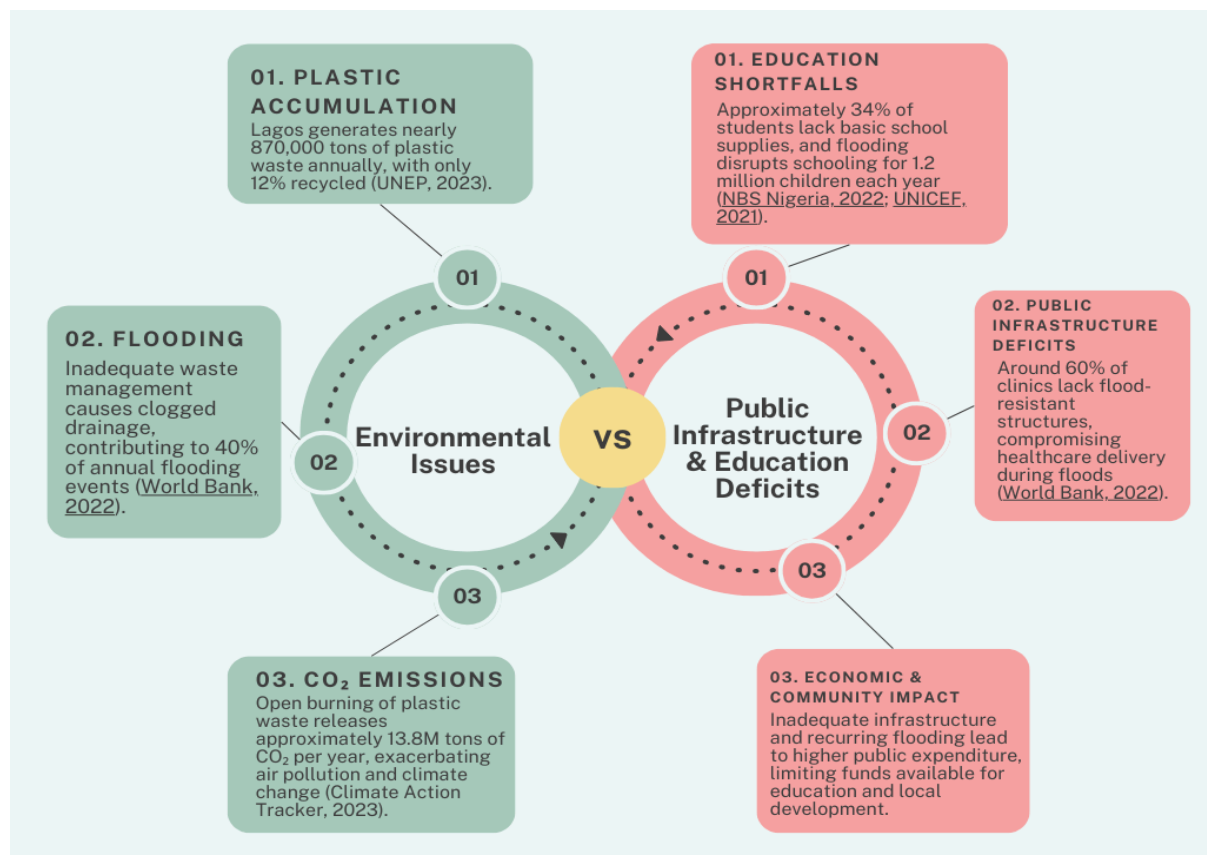
1. Environmental Challenge

Massive Plastic Waste Generation:

Lagos alone generates nearly 870,000 tons of plastic waste annually, with only 12% currently recycled (UNEP, 2023). This is due to rapid urbanization, high population density, and increased consumerism. Inefficient waste management systems and inadequate recycling infrastructure lead to plastic waste ending up in landfills, streets, or waterways. This mismanagement not only clogs drainage systems, worsens leading with 68% urban flooding, but also contributes to air and water pollution, harming human health and ecosystems. Addressing this issue is crucial for environmental degradation and public health risks. The low recycling rate underscores the need for innovative solutions to transform waste into valuable resources (LAWMA, 2023).

Urban Flooding & Air Quality Degradation:

Nigeria's open burning of plastic waste releases 13.8 million tons of CO₂ annually, accelerating global warming and deteriorating air quality. This practice, often in areas with inadequate waste management infrastructure, leads to environmental degradation and public health issues. Toxic byproducts like dioxins and furans are also emitted. Addressing this issue is crucial for reducing Nigeria's carbon footprint and achieving sustainable development targets (Climate Action Tracker, 2023).



2. Education & Infrastructure Gaps

Educational Disruptions:

Flooding and environmental Approximately 34% of Lagos students lack basic school supplies, severely hindering their ability to learn effectively and placing them at a disadvantage in a competitive academic environment (NBS Nigeria, 2022). In addition, frequent flooding which is often exacerbated by poor waste management disrupts schooling for an estimated 1.2 million children each year, causing significant interruptions in their education and long-term academic progress (UNICEF, 2021). These disruptions not only impact academic performance but also affect students' overall well-being, highlighting the urgent need for comprehensive interventions that address both environmental and educational deficits.

Inadequate Public Infrastructure:

Around 60% of Lagos' clinics lack flood-resistant infrastructure, a significant issue due to the city's vulnerability to frequent flooding events. Inadequate waste management and urban drainage systems exacerbate this vulnerability. Without flood-resistant designs, clinics risk inundation, equipment damage, loss of medical supplies, and temporary closures. These disruptions compromise healthcare delivery and long-term community health, causing patients to travel longer distances or miss timely treatment. Upgrading clinics with flood-resistant materials and engineering solutions is crucial for reliable healthcare access, especially for vulnerable populations during extreme weather events (World Bank, 2022).

Solution Design

Core Mechanism

Community-Driven Plastic Collection:

Establish plastic collection hubs in 10 strategically selected LGAs across Lagos (focusing on flood-prone areas like Makoko and Ajegunle). Collection is coordinated by local government and community organizations rather than rewarding individuals directly.

Revenue Generation & Reward Branch:

Local partners (e.g., Wecyclers) process collected plastic into recyclable products such as pellets and plastic bricks. Revenue from these sales and additional income from carbon credit programs feeds into a state-managed fund. LGAs that achieve or exceed predetermined benchmarks (e.g., plastic collected, effective drainage upgrades, public facility improvements) receive additional funding, technical support, and recognition.

Multi-Sector Partnerships:

Collaborate with key stakeholders:

a. Recycling Partners: Process plastic waste into marketable raw materials.

b. Lagos SUBEB: Provide facilities and logistical support for collection and distribution.

c. International Agencies (UNEP, World Bank, UNICEF): Provide guidelines, technical support, and validation of environmental and educational impacts.

Innovative Features

Dual Data-Tracking System:

- a. **Blockchain Ledger:** A secure, transparent ledger (using a platform similar to Rerose) records every kilogram of plastic collected and correlates it with subsequent reinvestment in public facilities.
- b. **Community Reporting:** Complementary paper logs and SMS-based reporting systems ensure that even communities with limited digital access contribute reliable data.

Public Infrastructure Upgrades Using Recycled Materials:

- a. **Recycled Plastic Bricks:** With a conversion rate of 1 ton = 10,000 bricks, recycled plastic is used to construct or retrofit public facilities (e.g., flood-resistant classrooms, health clinics, and sanitation units).



Capacity Building & Collaborative Engagement:

- a. **Workshops & Training:** Organize hands-on training sessions for local government officials, community leaders, and educational administrators on effective waste management, sustainable infrastructure planning, and indigenous practices integrated with modern technology (a “Two-Eyed Seeing” approach).
- b. **Academic Partnerships:** Collaborate with local universities to conduct research, monitor environmental and public health outcomes, and develop innovative recycling and construction techniques.

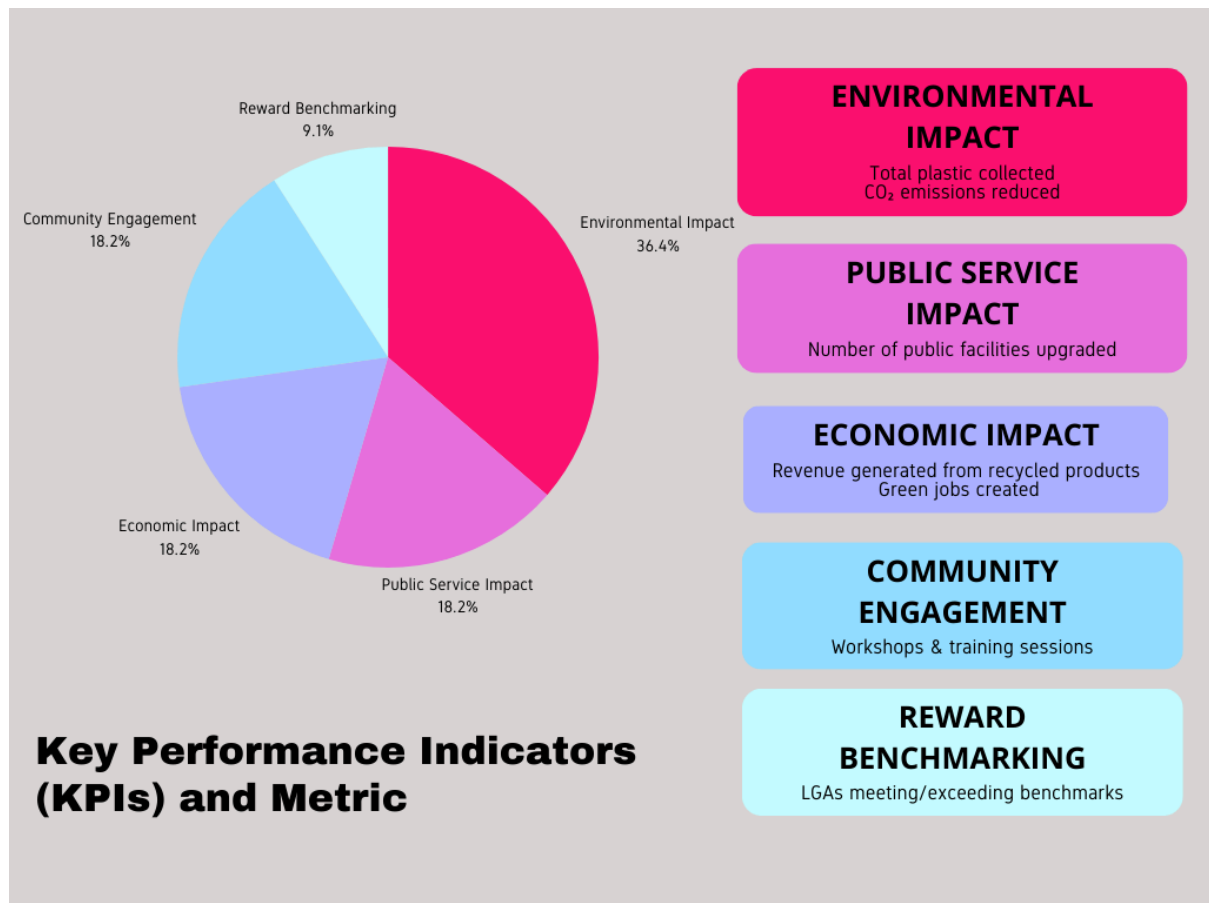
Performance-Based Incentive System for LGAs:

Reward Branch: LGAs that meet or exceed environmental, and infrastructure benchmarks receive additional funding and technical support. 20% of carbon revenue funds health insurance for waste-pickers via Lagos Health Scheme. These benchmarks are monitored through our dual data-tracking system and include:

- Amount of plastic collected
- Reduction in local flooding incidents
- Number and quality of public facilities upgraded

Key Performance Indicators (KPIs) and Metric

Category	KPI	Target (Year 1)
Environmental Impact	Total plastic collected	50 metric tons
	CO ₂ emissions reduced	120 tons
Public Service Impact	Number of public facilities upgraded	5 facilities (e.g., schools, clinics)
Economic Impact	Revenue generated from recycled products	\$20,000+ in initial sales
	Green jobs created	50 new positions
Community Engagement	Workshops & training sessions	≥ 20 sessions
Reward Benchmarking	LGAs meeting/exceeding benchmarks	Top 3 LGAs receive additional funds



Implementation Timeline

Phase 1 (0–3 Months):

- Pilot Setup & Partner Onboarding:
- Secure partnerships with agents, Lagos SUBEB, local government authorities, and academic institutions.
- Establish 10 pilot plastic collection hubs in targeted LGAs and launch initial community workshops.
- Deploy the dual data-tracking system.

Phase 2 (4–6 Months):

- Revenue Generation & Infrastructure Development:
- Begin processing collected plastic and generating revenue through recycled product sales and carbon credits.
- Construct the first pilot public facility (e.g., an upgraded school or clinic using recycled plastic bricks).
- Monitor pilot performance through the established KPIs.

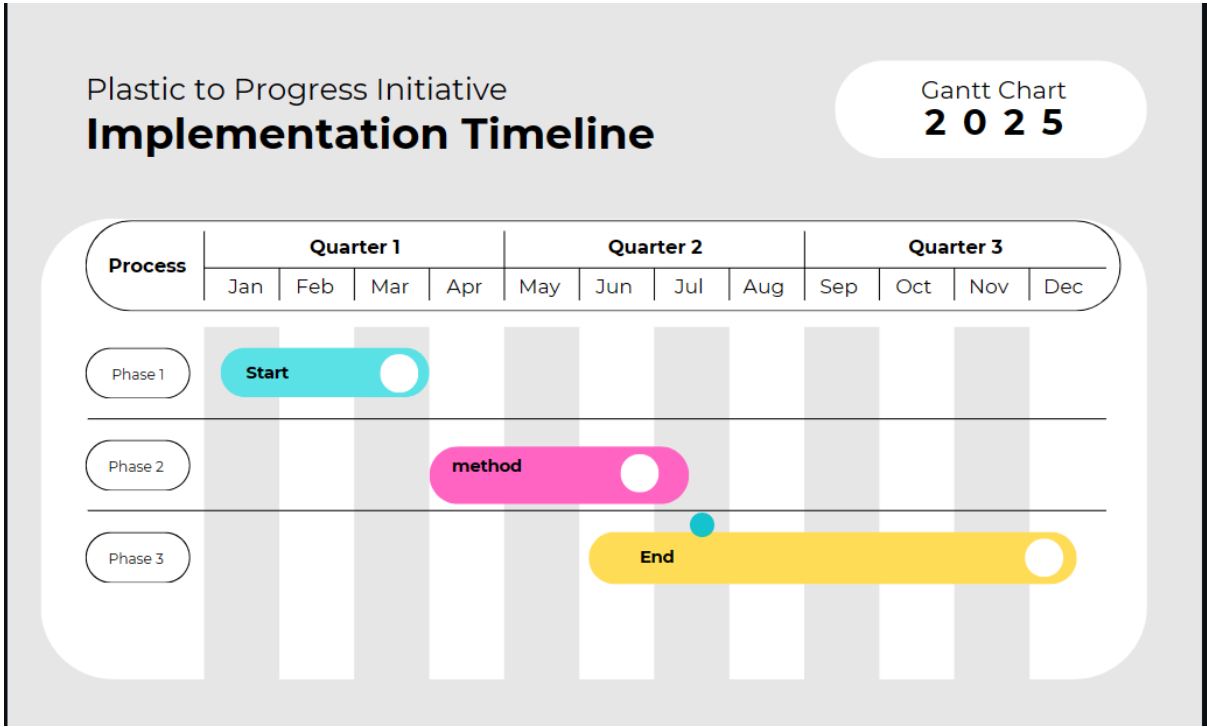
Phase 3 (7–12 Months):

- Expansion & System Optimization:
- Scale up to 10 additional LGAs based on pilot success and refine processes using community feedback.

- Implement the competitive reward branch, allocating additional funds to LGAs that exceed benchmarks.
- Enhance data tracking and continuous capacity-building workshops.

Phase 4 (Year 2+)

- Scale to other states LGAs; train local contractors for maintenance.

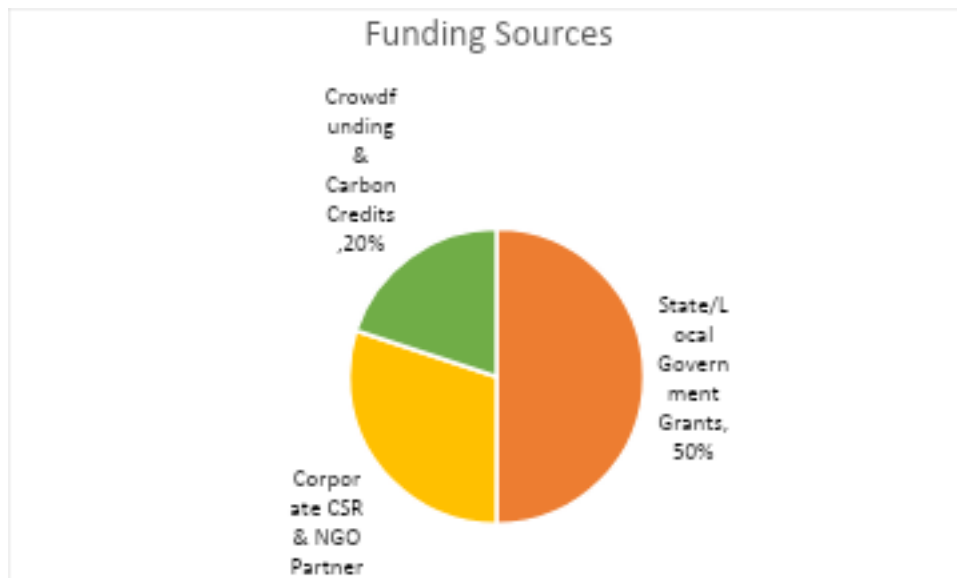


Budget Breakdown

Item	Cost (USD)
Plastic Collection Infrastructure	\$4,000
Recycling Processing Fees (Pilot Phase)	\$3,000
Public Facility Upgrades (Recycled Bricks)	\$6,000
Community Workshops & Training	\$2,000
Total	\$15,000

Funding Sources:

- State/Local Government Grants: 50%
- Corporate CSR & NGO Partnerships: 30%
- Crowdfunding & Carbon Credits: 20%



Core Values & Strategic Insights

- **Triple Bottom Line Impact:**

This initiative aligns with SDG 4 (Quality Education), SDG 11 (Sustainable Cities), and SDG 13 (Climate Action) by addressing environmental, social, and economic challenges concurrently.

- **Equity & Inclusivity:**

Reinvesting revenue into public infrastructure ensures that the benefits are shared community-wide, particularly in marginalized areas.

- **Data-Driven Transparency:**

The dual data-tracking system guarantees accountability and allows for real-time performance monitoring, building trust among stakeholders.

- **Scalable & Replicable Model:**

Although piloted in Lagos, the framework is designed for nationwide scalability, serving as a blueprint for sustainable development in other Nigerian states.

- **Collaborative Governance:**

Involves local government, NGOs, academic institutions, and international bodies (UNEP, World Bank, UNICEF) to ensure rigorous planning and execution.

Risk Assessment & Mitigation

Low Community Participation / LGAs Failing to Meet Benchmarks

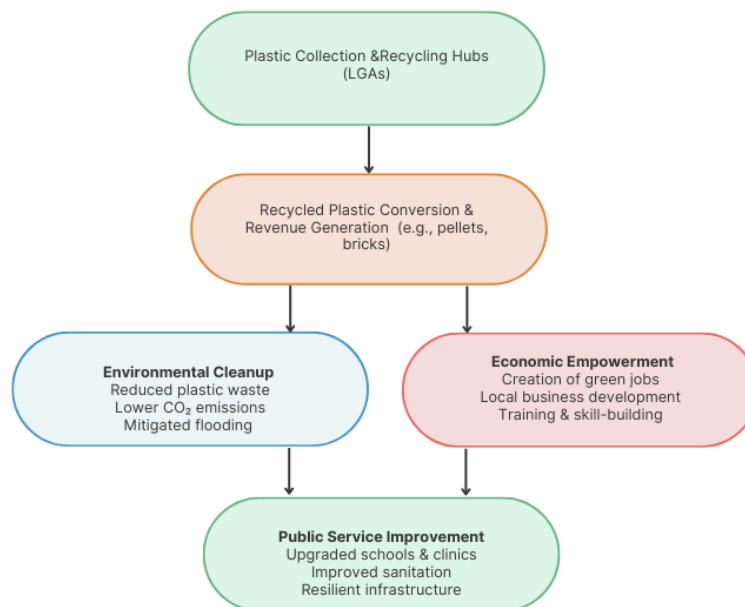
- Mitigation: Intensify outreach by involving local leaders, conduct baseline training, and offer continuous technical support.

Recycler Capacity Constraints:

- Mitigation: Diversify partnerships by engaging multiple recyclers and negotiating volume agreements in advance.

Data Reporting and Verification Challenges:

- Mitigation: Use a robust dual data-tracking system (blockchain plus low-tech methods) and schedule periodic audits to ensure accuracy and transparency.



Conclusion

The Plastic to Progress Initiative is a visionary, scalable solution that redefines Nigeria's approach to plastic waste management by channelling environmental cleanup into tangible public service improvements. Through a community driven, revenue reinvestment model to be piloted in Lagos LGAs, this initiative not only mitigates flooding and reduces CO₂ emissions but also upgrades critical public infrastructure thereby enhancing educational outcomes and overall quality of life. With robust KPIs, clear risk mitigation strategies, and a comprehensive implementation plan supported by data from UNEP, World Bank, UNICEF, and NBS Nigeria, this proposal is designed to serve as a model for sustainable development nationwide.

References

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