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DOUALA GREEN CITY 2035

INTEGRATED SMART WASTE MANAGEMENT

RECYCLING & CLEAN CITY DEVELOPMENT

Project Promoter
KHT-INVEST

Proposed Location
Douala, Littoral Region, Republic of Cameroon

Project Sector
Waste management, recycling, renewable energy and smart-city technology

Implementation Period
5 years, with a long-term vision toward 2035

Document Status
Proposal for partnership, investment and institutional support

A cleaner, healthier and more resilient Douala–powered by technology, investment and community participation.

Your Success is Our Business

1. Executive Summary

Douala is Cameroon's principal economic hub and a major centre for trade and commerce. Rapid urban growth, increasing consumption, plastic pollution, inadequate waste sorting, illegal dumping and blocked drainage systems create challenges for cleanliness, public health, flood resilience and urban development.

The Douala Green City 2035 Project, proposed by KHT-INVEST, aims to transform waste management from a costly public-service challenge into a modern, technology-driven and economically productive industry. The project will collect, sort, recycle and recover value from household, commercial, market and suitable industrial waste.

The proposed system combines modern recycling machinery, artificial intelligence, smart collection systems, renewable energy, digital monitoring and community participation. Recovered resources may include recycled plastic products, metals, paper, glass, compost and energy from suitable organic waste where technically and environmentally viable.

The project will seek cooperation with the Douala City Council, relevant municipal and national authorities, private waste operators, technology providers, development institutions, investors and local communities.

Our central objective is to make Douala a cleaner, healthier and more attractive city while creating jobs, generating investment opportunities and building a sustainable recycling economy.





2. The Problem We Intend to Solve

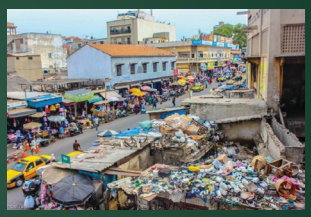
Douala's waste challenge requires more than additional garbage trucks. It requires a coordinated system that prevents waste accumulation, separates recyclable materials, improves collection and establishes commercially viable recycling facilities.

- Plastic pollution: bottles, packaging, bags and other plastics accumulating in streets, drains and waterways.
- Collection inefficiency: missed collections, overflowing collection points and unnecessary transport journeys.
- Limited recycling infrastructure: insufficient local capacity to turn collected waste into quality-controlled, marketable products.

- Organic waste accumulation: food and market waste that could potentially be converted into compost or biogas under appropriate conditions.
- Public awareness and accountability: the need for sustained citizen participation, reliable reporting and effective enforcement.
- Flooding and environmental damage: waste obstructing drainage and polluting water bodies, alongside other causes of urban flooding.

The project will complement existing municipal services rather than duplicate them. Its first step will be a technical assessment of waste volumes, collection coverage, recycling markets, infrastructure and priority neighbourhoods.






3. Vision, Mission and Strategic Objectives

Vision: To make Douala one of Central Africa's leading clean, green and smart cities by 2035.

Mision: To build an integrated waste management and recycling economy using modern technology, responsible investment, local employment and community participation.

- **Clean streets and public spaces:** reliable collection, street cleaning, market sanitation and rapid-response teams for illegal dumping hotspots.
- **Build a circular economy:** recover plastics, metals, cardboard, glass and suitable organic materials for recycling and productive reuse.
- **Introduce smart-city technology:** use AI, GPS tracking, connected sensors and digital dashboards to improve performance and accountability.
- **Develop clean energy solutions:** use solar power where suitable and evaluate anaerobic digestion or other appropriate recovery technologies.
- **Create jobs and investment opportunities:** support recycling enterprises, local manufacturers, collection cooperatives, technicians and environmental entrepreneurs.

4. Latest Technologies Proposed



4.1 Smart bins and connected collection points

Install durable, colour-coded bins at selected markets, schools, commercial areas, residential zones and public spaces. At high-volume locations, sensors will monitor fill levels and alert operators when collection is required. Benefits include fewer overflowing bins, better scheduling and improved service visibility.

4.2 AI-powered sorting and optical separation

Use conveyor systems, magnets, eddy-current separators and optical sorting equipment with cameras or near-infrared sensors to identify and separate suitable materials. This can improve material recovery and the consistency of recyclable feedstock.





4.3 GPS tracking and AI route optimisation

Equip collection vehicles with GPS and route-planning software that considers traffic, schedules, bin fill levels and vehicle capacity. This may reduce unnecessary journeys and fuel consumption while improving fleet monitoring.

4.4 Automated plastic recycling

Process appropriate plastics through sorting, shredding, washing, drying and extrusion or pelletising according to polymer type. Potential products include recycled flakes, pellets and selected manufactured goods, subject to quality testing and buyer requirements.





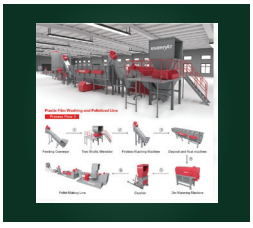
4.5 Organic waste recovery and biogas

Separate food and market waste for controlled composting or anaerobic digestion where feedstock quality, contamination control and operating economics support the technology. Compost, biogas and digestate must meet applicable quality and safety requirements.

4.6 Solar power and energy efficiency

The project will use proven commercial technologies wherever possible and introduce more advanced systems as local operating data, skills and financing permit. Technology selection will consider maintainability in Cameroon, spare-parts availability, local training, waste composition and financial viability.





4.7 Digital city cleanliness platform

Create a central dashboard combining collection records, GPS information, facility weighing data, complaints and inspection results. Residents could report illegal dumping through a mobile-friendly website, messaging channel or hotline, with privacy protections for personal data.



Technology principle: Douala does not need the most expensive technology in every location. It needs technology that is maintainable, suitable for local waste composition and economically justified.

5. Integrated Waste Collection and Recycling Model

Step 1 Waste separation at source: households, businesses, markets, schools and industries separate waste where practical.

Step 2 Smart collection: colour-coded bins, collection schedules, GPS tracking and digital reporting support reliable pickup.

Step 3- Transfer, weighing and sorting: materials are inspected, weighed and separated using appropriate manual and mechanical processes.

Step 4 - Recovery and safe disposal: recyclable materials are prepared for buyers; suitable organic waste is processed into compost or biogas; residual waste is sent to authorised disposal facilities.

Waste stream	Potential recovered product	Potential customers
PET and suitable plastics	Flakes and recycled pellets	Plastic converters and manufacturers
HDPE and rigid plastics	Pellets and moulded products	Packaging and product manufacturers
Iron, steel and aluminium	Sorted and prepared metal scrap	Foundries and metal recyclers
Cardboard and paper	Baled fibre for reprocessing	Paper and packaging manufacturers
Glass	Sorted glass cullet, if viable	Glass processors and manufacturers
Organic waste	Quality-controlled compost	Agriculture, landscaping and horticulture
Suitable food waste	Biogas and digestate	Energy users and agricultural operators

The final product mix will depend on market testing, technology, quality requirements, transport costs and purchase agreements. Hazardous, medical and electronic waste require separate, appropriately licensed handling routes.

6. Keeping Every Neighbourhood Clean







6.1 Neighbourhood Cleanliness Programme

- Designated collection points and clear waste separation instructions.
- Published collection schedules and a process for reporting missed collections.
- Regular street sweeping and removal of illegal dumping.
- Market sanitation plans, including dedicated food-waste collection.
- Drainage inspections and litter removal before and during the rainy season, with appropriate safety precautions.
- Local sanitation teams and performance monitoring based on cleanliness inspections and verified collection records.

6.2 Citizen Recycling Incentives

Introduce a proposed **Recycle and Earn Douala programme.** Residents, schools, businesses and community associations could earn points or payments for verified deliveries of acceptable recyclable materials.

- Mobile money payments for eligible materials.
- Rewards for schools that achieve verified recycling targets.
- Recognition for clean neighbourhoods.
- Benefits from participating commercial partners.
- Public reporting of recovered materials and programme proceeds.

Incentives will depend on actual material weights, quality and programme funding. Municipal enforcement should accompany education, and reliable collection services must be available so residents have a practical alternative to dumping.

6.3 Public Education and Enforcement

Work with schools, universities, community leaders, market associations, transport operators and environmental organisations. Communication should be available in French, English and appropriate local languages, and enforcement should follow applicable laws and fair procedures.

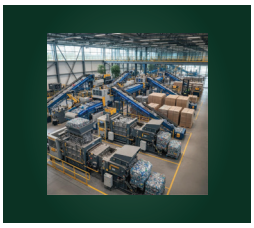
7. Proposed Infrastructure and Machinery

A recycling factory alone will not make Douala clean. The project must establish an effective street-level system that makes it easy for residents and businesses to dispose of waste correctly.



Transfer and collection centres: covered loading areas, sealed containers, weighbridges or platform scales, drainage and leachate control, vehicle access and inspection areas.

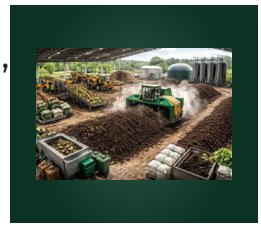
Material recovery facility (MRF): sorting conveyors, screens, magnetic and eddy-current separators, optical sorters where justified, balers and storage areas.





Plastic recycling plant: identification and separation equipment, shredders, washing tanks, friction washers, dryers, extrusion and pelletising systems selected by target polymer.

Organic waste processing facility: reception areas, contamination removal, composting or digestion systems where justified, odour management and product testing.





Collection and sanitation fleet: sappropriately sized trucks, compactors, small vehicles for narrow streets, street sweepers, drain-cleaning equipment and worker protective equipment.

8. Project Implementation Plan

Period	Phase	Potential customers
Months 0-6	1. Feasibility and preparation	Map hotspots and routes; conduct waste-composition and market studies; identify sites; consult stakeholders; prepare business plan, safeguards and pilot design.
Months 6-18	2. Pilot implementation	Launch selected zones; install collection points and some sensor-equipped bins; deploy GPS and reporting; establish sorting, baling and material storage; begin incentives and monitoring.
Months 18-36	3. Infrastructure and commercial expansion	Develop appropriately sized recovery and recycling facilities; expand collection; contract buyers; train technicians; evaluate solar and organic recovery.
Months 36-60	4. Scaling and optimisation	Expand based on results; integrate reporting; increase capacity in line with supply and demand; audit results; prepare long-term expansion toward 2035.

The schedule is indicative. Construction and expansion depend on financing, land availability, environmental approvals, procurement and municipal agreements.

9. Investment and Financing Strategy

The project is designed as an investment opportunity with environmental and social benefits. Its financial model should combine reliable service revenues with income from recovered materials, while avoiding dependence on uncertain recycling prices alone.

9.1 Potential sources of revenue

Revenue stream	Proposed model
Waste collection and sanitation	Municipal service contracts or authorised commercial agreements
Sorting and recycling	Sale of recovered plastics, metals, paper and glass
Recycled plastic products	Sale of flakes, pellets and manufactured products
Organic waste recovery	Sale of quality-controlled compost and, where feasible, biogas or energy
Commercial waste services	Contracts with markets, hotels, shopping centres and businesses
Producer and packaging partnerships	Legally compliant take-back or extended producer responsibility arrangements
Environmental and climate finance	Eligible grants, concessional finance or results-based programmes

Carbon credits and environmental certificates are conditional, not guaranteed revenue. Eligibility, measurement, verification and market demand must be established before such revenue is included in the base-case business plan.

9.2 Proposed funding structure

Introduce a proposed **Recycle and Earn Douala programme.** Residents, schools, businesses and community associations could earn points or payments for verified deliveries of acceptable recyclable materials.

- Private equity from strategic and impact investors.
- Public-private partnerships with relevant authorities.
- Equipment financing and commercial loans where cash flow can support repayment.
- Development finance and climate-related grants for eligible components.
- Technology partnerships with equipment manufacturers and digital service providers.
- Offtake agreements with industrial buyers to support investment in recycling capacity.

KHT-INVEST's proposed role is to coordinate project development, investor engagement, technology sourcing, commercial partnerships and financing discussions, subject to agreement with competent authorities and project stakeholders.

9.3 Investment budget framework

A credible investment request must be supported by engineering designs, equipment quotations, site studies, operating-cost estimates and projected revenue. It would be misleading to present an unverified total investment figure as though it were established.

- Site development: land or lease, preparation, roads, drainage and buildings.
- Collection infrastructure: bins, containers, collection vehicles and transfer equipment.
- Recycling machinery: sorting line, balers, shredders, washing and processing equipment.
- Digital technology: software, sensors, GPS, connectivity and monitoring systems.
- Energy systems: solar installation, electrical works and justified storage.
- Environmental safeguards: leachate control, wastewater treatment, fire prevention and emissions controls.
- Workforce and project development: recruitment, training, protective equipment, feasibility, engineering and permits.
- Working capital and contingency: payroll, fuel, utilities, maintenance, initial operating costs and a justified allowance for project risks.

The financial study will separately estimate capital expenditure, annual operating expenditure, expected sales, contracted service revenues, working capital, financing costs, cash flow, break-even point and investor returns. Supplier quotations should include shipping, installation, taxes, customs and local maintenance.

10. Expected Results and Performance Indicators

The project will measure success through independently verifiable results rather than promises alone. The following figures are proposed pilot targets, not established current performance data, and should be adjusted after the baseline study.

Indicator	Illustrative pilot target	Measurement
Scheduled collection reliability	At least 80%	Completed scheduled collections divided by planned collections
Recovery rate	At least 25%	Incoming waste recovered as usable materials at the pilot facility
Illegal dumping incidents	50% reduction	Verified incidents at designated pilot hotspots against baseline
Employment and skills	Track jobs and training	Jobs created, training completed and worker safety

11. Environmental and Social Safeguards

- **Environmental assessment:** complete required studies and obtain applicable approvals before construction or operation.s.
- **Water and soil protection:** install suitable drainage, leachate collection and wastewater treatment systems.
- **Air quality and odour:** icontrol dust, odours, noise and emissions, especially at organic waste and industrial facilities.
- **Waste picker inclusion:** explore fair opportunities for existing informal recyclers to participate in formal collection, sorting and recovery arrangements.
- **Worker protection:** provide training, appropriate personal protective equipment, safe machinery and emergency procedures.
- **Hazardous waste separation:** establish specialist handling for medical waste, batteries, chemicals, electronic waste and other dangerous materials.
- **Community protection:** consult neighbours, establish complaint channels and monitor traffic, noise and local impacts.
- **Flood resilience:** locate facilities appropriately and design drainage and site infrastructure for local rainfall and flood risks.

The project will comply with applicable Cameroonian requirements and the environmental and social standards required by its financing partners.

12. Governance and Partnership Structure

Public authorities and municipal partners: policy coordination, public-service alignment, permissions and oversight.
KHT-INVEST - proposed project development partner: investment coordination, technology sourcing, partnerships and project development.

Technology and operating partners: machinery, software, collection, processing and maintenance.
Financial partners: investors, lenders, development institutions and eligible grant providers.

Communities and businesses: waste separation, participation, service feedback and material supply.

Independent oversight: environmental monitoring, financial audits and performance verification.

The final governance model will be established through formal agreements. Public authorities will retain their statutory responsibilities, and municipal contracts, land allocations, collection concessions or public-private partnerships will require appropriate approvals and procurement procedures.

13. Why Investors and Development Partners Should Support This Project

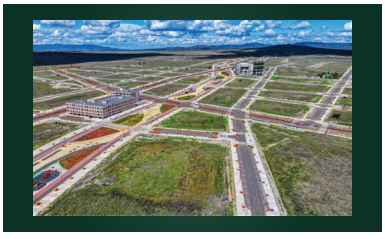
- **Government and municipal authorities:** a pathway to complement sanitation services, strengthen waste recovery and improve accountability.
- **Investors:** potential revenue opportunities in collection services, recycling infrastructure, recovered materials, recycled manufacturing and logistics.
- **Technology providers:** a platform to introduce and adapt commercially proven smart waste systems to the Cameroonian market.
- **Development institutions:** alignment with urban resilience, environmental protection, local employment, circular economy development and SDGs 11, 12 and 13.
- **Local communities:** the prospect of cleaner public spaces, improved services, new employment opportunities and greater participation.

These benefits depend on effective implementation, sufficient financing, reliable waste supply, appropriate technology and viable markets. Expansion decisions should be linked to measured results.

14. Immediate Action Plan

- **Prepare a formal concept note:** present objectives, pilot scope, preliminary infrastructure needs and partnership structure.
- **Request a technical meeting with the Douala City Council:** discuss existing operations, service gaps, pilot zones and approvals.
- **Commission a feasibility study:** measure waste composition and volumes, map hotspots, evaluate sites and test demand for recycled products.
- **Obtain machinery quotations:** request specifications, throughput guarantees, installation costs, warranties and local maintenance arrangements.
- **Build the investment case:** develop financial projections, assess financing options and seek preliminary purchase commitments from potential buyers.
- **Launch a measurable pilot:** establish baseline data, agree service targets and verify results before expansion.

15. Conclusion and Call for Partnership



Douala deserves a cleaner environment that reflects its importance as Cameroon's economic capital. Achieving this vision requires more than occasional cleanup campaigns. It requires a lasting system that combines efficient waste collection, modern recycling facilities, digitalmonitoring, responsible investment and active citizen participation.

Through the proposed Douala Green City 2035 Project, KHT-INVEST seeks to develop a practical and financially sustainable approach to turning waste into valuable resources, creating green jobs and improving the quality of urban life.

The project invites the Douala City Council, relevant government ministries, private investors, international development institutions, environmental organisations, machinery manufacturers and local businesses to participate in feasibility studies, technical cooperation, financing discussions and pilot implementation.

We propose beginning with a carefully selected pilot area, establishing measurable targets and demonstrating results that can justify expansion to other parts of the city.

A cleaner Douala is not simply an environmental ambition. It is an investment in public health, economic opportunity, climate resilience and the future of Cameroon.

Selected References and Supporting Resources

Tel: +971 56 562 4086 | +237 6 54 24 56 14
E-mail: manyamnelson8@gmail.com | support@khtinvest.com
Web: www.khtinvest.com