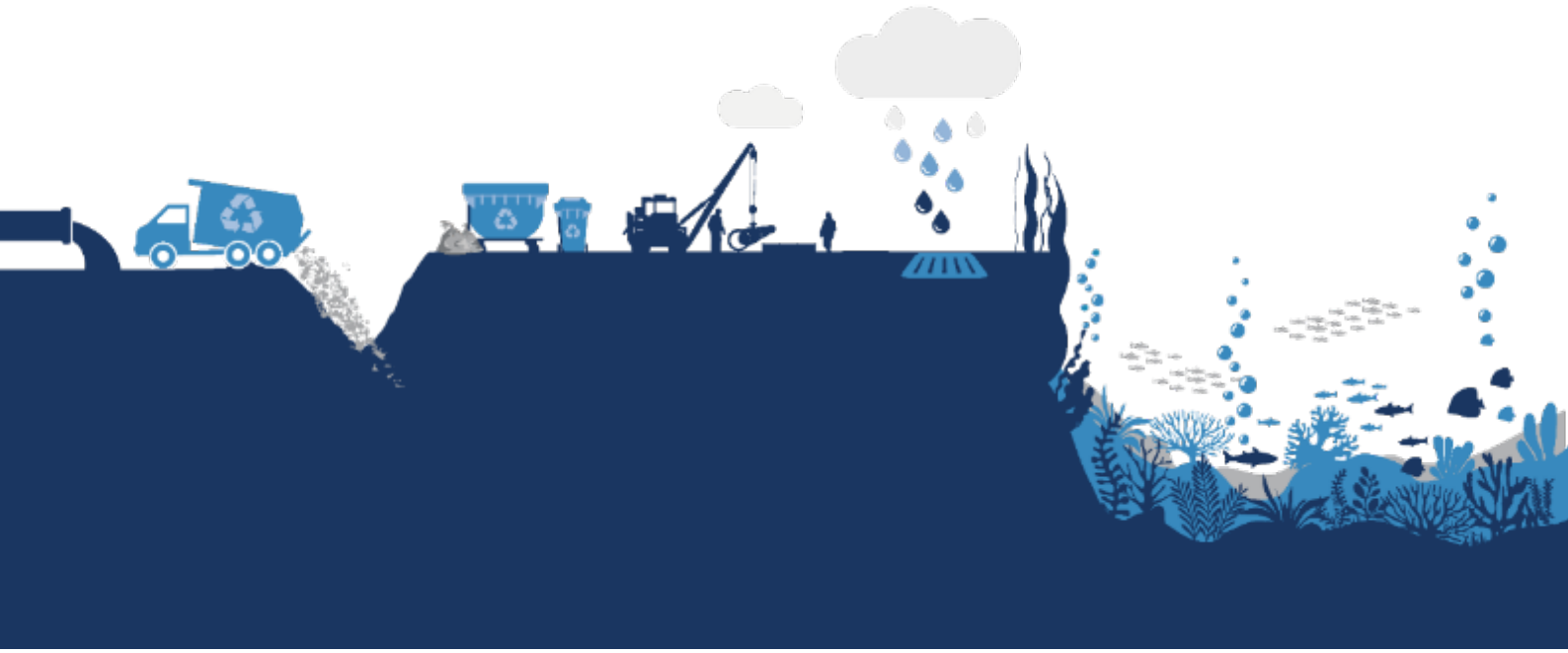
Tetra Tech International Development

DRC-01 Implementation of the five-year sanitation and solid waste management plan for the city of Kinshasa

Mini Fiche

April 2022



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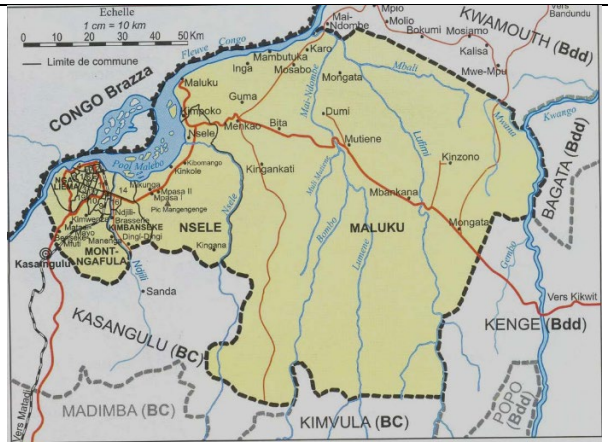
1. Introduction

Summary of the project

Name of the project	Implementation of the five-year sanitation and solid waste management plan for the city of Kinshasa.
Location	Kinshasa, Democratic Republic of Congo.
Promoter	Main promoter : Direction Nationale d'Assainissement (DAS). Executive Agency : RASKIN (Régie d'Assainissement de Kinshasa). Technical support : UN-Habitat.
Sectors covered	Solid waste management, circular economy.
Main components	Introduction/improvement of waste collection. Support and promotion of recycling and composting. Rehabilitation and improvement of the operation of the Mpasa CET (landfill).
Estimated budget	€ 169.6 million
Population summary	17 200 000 inhabitants in the metropolitan area.
Contact People	enquiries@copip.eu

Figure 1 Location of the project



Map of Congo with Kinshasa[1] | The city of Kinshasa on the Congo River[2]

2. Main institutions and planning framework

Main institutions involved	The National Sanitation Directorate (DAS) under the Ministry of Environment and Sustainable Development is the project promoter. The Régie d'Assainissement de Kinshasa (RASKIN) is the implementing agency. It operates with the budget of the Kinshasa governorate.

[1] Map: www.atlas-monde.net
[2] Map: De Saint Moulin, 2005

	Under decentralisation, the 24 communes and the Metropolitan Council deal with the operational aspects of waste management.
Planning framework: strategies and policies	The National Sanitation Policy (NSP) was formulated in 2013, and solid waste is one of the sectors covered. A national water, sanitation and hygiene strategy was published in 2019. It covers rudimentary aspects of waste management (collection only). RASKIN has developed a five-year plan for 2020 - 2025. The project described in this sheet aims to implement this plan. The legal framework includes the following texts[3]: • Edict 003/2013 of 9 September 2013 on sanitation and environmental protection; • numerous provincial government decrees relating to waste management in the City of Kinshasa; • Ordinance-Law No. 13/001 of 23 February 2013 fixing the taxes, duties, fees and charges of the provinces and decentralised territorial entities as well as their distribution methods, and instituting the sanitation, waste removal and household refuse tax.
Capabilities	Institutional, technical and financial capacities for waste management are very limited. Neither RASKIN nor the municipalities have the necessary means. The institutional fabric is complex, and mandates are not always clear.

3. Inventory and needs analysis

Solid waste management	In Kinshasa, a person produces an average of 0.70 kg of waste per day; total waste production is estimated at 9 835 tonnes/day; an increase to 11 400 t/day by 2025 is expected. The collection and transport rate remains low, at just 17%. Due to a lack of roads, the outlying districts of Kinshasa have no access to waste collection. The disposal and recycling rates are 22% and 1% respectively. The financial resources made available to RASKIN are not proportional to the quantity of waste to be managed. Collection activities are not carried out by means of a collection plan, but rather on the basis of ad hoc programmes with modest and intermittent funding, without organized efforts to control and improve the situation. At the Mpasa Landfill Site, waste disposal and recovery by waste pickers are poorly managed. There are no systems for biogas collection and leachate treatment. The weakness of formal waste management allows the development of some undesirable alternative practices. Non collected waste is instead dumped in public places, drains, canals and rivers. A fringe of the population burns and buries waste in their backyards. These practices have significant health and environmental impacts, including odour and taste nuisances, water, soil and groundwater pollution, disease transmission, respiratory and digestive disorders, greenhouse gas emissions, blockage of gutters and rivers which contribute to flooding during storm events, etc. The population has limited knowledge of the health and environmental problems associated with the accumulation of waste.[4] ***Figure 2: Image showing the results of the poor waste management***

[3] Source : https://africancleancities.org/assets/data/Organization/Kinshasa_FR.pdf

[4] Text of RASKIN's five-year waste management plan, abridged and completed by the Consultant.
Photo: The Funa Yolo River at its mouth with the Congo River,
https://www.lemonde.fr/afrique/article/2021/12/03/a-kinshasa-des-citadins-s-attaquent-a-l-immense-defi-de-l-assainissement_6104652_3212.html

	
Wastewater	Only the city centre of Kinshasa has a sewerage system. However, there is no treatment and sewage is discharged into watercourses or channels. The outlying areas have no access to basic services. Due to the inaccessibility of many areas, even the emptying of traditional and public latrines does not take place in general.

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4. Project scope and budget

4.1 Project objectives

The five-year project management plan sets the following objectives:

- Control the generation of solid waste in the 24 communes by 2022;
- Increase the rate of solid waste collection and transport in the 24 communes to 60% by 2025;
- Increase the rate of waste disposal and recycling in the City of Kinshasa to 50% by 2025;
- Provide the City of Kinshasa with solid waste management infrastructure by 2025 (the number and nature of which are not yet determined);
- Promote and raise awareness of waste sorting and the 3Rs (Reduce, Recycle and Reuse) by 2025.

4.2 Proposed investments

RASKIN proposes to acquire the following equipment and infrastructure.

Table 1 : Summary of Investments

Type of investment
Container trucks
Ampli roll trucks
Compacting trucks
Dumper trucks
Loaders
Excavators
Tricycles
Rehabilitation of transfer stations
Metal containers for transfer stations
Rehabilitation of drop-off points
Metal containers for drop-off points
Sorting centres
Equipment for granulometric sorting
Recycling centres
Recycling equipment
Improvement of landfill system
Total project cost
Euro 70 684 000 (million of DRC Francs) - 159 887

In the opinion of the consultant, this budget is not realistic for the following reasons:

- A lot of investment in collection trucks, but no corresponding investment in tricycles, which are however indispensable for collection in less accessible areas;
- Need to think about the ideal capacities to find a balance between collection (small and medium capacities) and transport (large capacities). Electrification of (pre-) collection vehicles together with solar energy for RASKIN roofs could be considered as a method to reduce gasoline cost;
- Underestimation of capacity and investment costs for:
  - Landfill sites ;
  - Sorting and recovery centres;
  - Improvement of the landfill system;
  - The "composting" component is completely missing.
- Due to the lack of liquid sanitation systems, the option of co-digestion of bio-waste and septic and latrine sludge should also be considered.

In order to achieve the objectives mentioned by RASKIN, the following additional investments are expected to be necessary.

Table 2 : Additional Investments

Additional investments
Tricycles
Composting facilities
Co-digestion facilities
Sorting and recycling centres
Biogas or compost latrines for peripheric Kinshasa
Improvement of landfill (gas extraction & treatment, leachate treatment, compaction)
TOTAL
Euro 99 100 000 Million of DRC francs 224 164

The tricycles would be made available to pre-collectors delegated by RASKIN to pre-collect from households.

This budget is calculated by estimating that 60% of the waste will be collected, and pre-collection by tricycle will be required for half of this waste; that 15% of the waste collected will be recycled, 25% will be composted. It also includes an important component of co-bio-methanisation of latrine waste with household biodegradable waste (10% of waste collected). The remaining 50% will go to landfill.

The entire project would therefore cost **EUR 169.8million** or **384 billion Congolese francs**. Savings could be made through good planning of the different capacities needed for pre-collection, collection and transport of waste or by introduction of phases by priority.

5. Contribution of the project to COI objectives

Solid waste component	Increase in collection rate from 17% to 60%. Reduction of waste and plastics leaking into the numerous streams, which lead to the Congo River and eventually to the Ocean Introduction, promotion and support of the circular economy Reduction of CO_{2eq} emissions from the decomposition of biodegradable waste in the CET. Creation of skilled jobs in waste recycling and recovery
Wastewater (black water)	Improving the sanitation situation in peripheral areas with no access to basic sanitation services Reduction of CO_{2eq} emissions from latrines

6. Financing and cost recovery

6.1 Current income

RASKIN calculates with a current cost of €18/tonne of waste. This includes collection, transport and treatment. However, it is not clear whether this also includes depreciation costs or whether this figure refers to operating costs only.

For the 11 400 t/day expected in 2025, the costs will therefore be as follows:

Table 3 : Proposed tariffs

Cost of collection, transport and treatment of waste	€	Million of DRC francs
Daily cost	205 200	464
Monthly cost	6 156 000	13 925
Annual cost	74 898 000	169 419

These are costs that are not covered by the state budget or by fees from households. In 2019, the Fonds d'Assainissement de la Ville de Kinshasa granted RASKIN 2.4 million Congolese francs per week[5] (equal to 1 100 EUR). This would not have covered even 1% of the real costs of the services for the 9 000 t/day, so one can imagine the severe limitations of the collection, transport and landfill carried out.

6.2 Potential for revenue generation

6.2.1 Increased income from households and businesses

RASKIN proposes the introduction of user charges as follows[6]:

Table 4 : Collection cost

Type of fee	No. of contributors	Fee amount per contributor per month		Annual revenue	
		€	DRC francs	€	Million DRC francs
Households	1 925 079	4.55	10 292	105 109 313	237 757
Ambulant sellers	200 000	8.18	18 507	19 636 364	44 417
Pre-collection enterprises	50	8.18	18 507	4 909	11
Industrial enterprises	200	8.18	18 507	19 636	44
Total				**124 770 222**	**282 230**
Total cost				**74 898 000**	**169 419**
Balance				**49 872 222**	**112 811**

[5] Source: https://deskeco.com/index.php/assemblee-provinciale-de-kinshasa-la-commission-denquete-sur-la-gestion-du-fonak-a-48-heures-pour-presenter-son-rapport-complet

[6] No. of households: RASKIN's five-year plan; other figures: consultant's estimate

If all fees were paid as planned by RASKIN, the cost of waste management services would be fully covered, and RASKIN would make a profit. For a fee recovery rate of 60 % and more, this is valid.

The COPIP consultant believes, however, that this planning of charges is unrealistic, for the following reasons:

- The average salary of a Congolese in 2019 was €42/month. Even if three members of a household work, this charge would equal 4% of the combined household income. The affordability limit for sanitation and waste management charges, on the other hand, is between 0.5 - 1% of monthly income. In addition, households already pay for the collection of waste at home by pre-collection companies.
- Fees for street vendors and collection companies are extremely high; moreover, street vendors often work in the informal sector and would be difficult to monitor.
- The fees for industries, on the other hand, are very low and probably do not cover the cost of industrial waste management. Households, street vendors and pre-collectors would therefore be subsidising industry.
- With the very weak enforcement power of the Congolese state, it is highly unlikely that individual taxpayers will be required to pay these fees.

6.2.2 Revenue generation from new recovery industries

Waste recovery can help to reduce waste management costs at least for the recyclable, compostable or digestable fractions. It would also reduce the need to transport and dispose waste in a sanitary landfill. However, it must be clear that such activities do not generate revenues to support the management of other waste streams. Collection, transport and landfill disposal will always be loss-making activities, generating no profit.

On the other hand, recycling activities provide employment for several thousand people throughout Kinshasa, and with good management, it is quite likely that the income from these enterprises will cover the costs. There are already a number of small and medium-sized recycling companies, especially for plastics, in Kinshasa, and their business is flourishing.

6.2.3 Reducing collection costs through community-based approaches

Currently, the project is designed with a centralised approach; waste is to be collected by the pre-collection companies and RASKIN, delivered to transfer stations and then transported to the sanitary landfill (CET).

However, RASKIN is planning to set up several civic amenity centres in the various municipalities. This model could be strengthened by using decentralised models for sorting, preparation for recycling, composting and biomethanisation.

6.3 Additional sources of funding

Potential sources of funding for project investments could include loans from the EIB and other banks and grants from the EU, bilateral donors and local and national authorities.

7. Main aspects to be considered for the pre-feasibility study

The summary below indicates the main points of the methodology to be followed in the pre-feasibility study to determine the economic value of the project and justify its financing, where a positive financial rate of return is not possible and subsidies are required. Other technical aspects are also included below.

Technical :

- Verification of waste generation and required facility capacities (waste characterization, weighing record evaluation);
- Waste characterisation and development of a market study for the different waste streams;
- Assessment of opportunities to introduce separate collection to improve the performance of recovery activities;

- Marketing of recovered materials and quality criteria;
- Current operation of Mpasa landfill and verification of improvement needs;
- Assessment of RASKIN's priority needs and analysis of alternative (community-based) approaches;
- Assessment of other technical aspects, e.g. options for treatment/recovery of bio-waste, sorting/refinement/recycling of plastics and other recyclable materials, closure of dumpsites, need for new sanitary landfill(s);
- Identifying the real cost of waste management.

Financial :

- Household income and expenditure surveys to facilitate an affordability study that will determine the cost recovery potential of solid waste management using existing revenue instruments as well as other potential instruments, e.g. collection tariffs, landfill entry fees, property taxes, other taxes, fines/penalties, potential revenues from recycling options, composting, biogas, potential revenues, surplus from a solar project for cross-subsidisation;
- Assess the financing gap in the context of project costs, affordable tariffs and other financial instruments;
- Identify any other potential economic, environmental and social benefits that could be used to justify closing the funding gap;
- Carry out a financial analysis of the project costs and revenue streams (discounted costs and revenue streams over 20-25 years);
- Conduct a cost-benefit analysis of potential economic, environmental and social impacts (quantifying these impacts where possible);
- Estimate the financial and economic rates of return. Here the financial rate of return will almost certainly be negative, but the economic rate of return may be positive as it would incorporate quantified economic, environmental and social benefits;
- Identify funding arrangements for the COPIP project (grant/loan/loan conditions) to bridge the funding gap.

Institutional :

- Identify technical assistance needs to determine beneficial institutional delegations and responsibilities (O&M, financial management, managerial capacity, monitoring).

8. Environmental and social aspects

Main environmental aspects	Situation of the landfill in Mpasa. Environmental damage and leaching of waste accumulated in the numerous illegal dumps, the rehabilitation of which is not included in the project. Environmental constraints on site selection for sorting, pre-treatment, recycling and composting plants.
Topics to be covered in the ESIA	The standard aspects (ESIA) are covered in the pre-feasibility specification. The main topics to be included in the ESIA are : • Environmental impact of the non-remediation of illegal dumping; • Comparison of the environmental impacts of a community-based approach to waste and black water management (inaccessible peripheral areas) with the centralised approach (transport, greenhouse gas emissions, land requirements, etc.); • Carbon footprint of the project; • Inclusion of the informal sector in collection and recovery activities.

9. Recommendations

Based on the findings of the Kinshasa fiche, the fiche has been ranked and is summarised below.

Ranking measure	COPIP ranking
EUD Priority	2
EIB Priority	2
Promoter Priority	2
Impact	2
Likelihood to proceed	1
Sub Total	**9 / 15**

Note priority ranking scale 1 = low ranking 2 = medium ranking 3 = high ranking

With the total score of nine it is recommended this COPIP project does not progress to Pre-Feasibility Stage within the current COPIP programme as the scoring is well below projects for which Pre-Feasibility Study can be considered.