



CIRCULAR SOLUTION, RESOURCE EFFICIENCY , SUSTAINABLE WATSE MANAGEMENT TOWARDS CLEAN CITIES

October 2025

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materials in use, and regenerate natural systems.

- ❑ Through this system, resources are kept at their highest possible value and waste are transformed into a valuable resource through practices like reuse, repair, Restoring products to a usable state (refurbishment), and recycling, eventually benefiting both the environment and the economy.





Circular solution, resource efficiency, and sustainable waste management in the City of Kigali

II. Kigali's Circular Economy Framework

About the City of Kigali

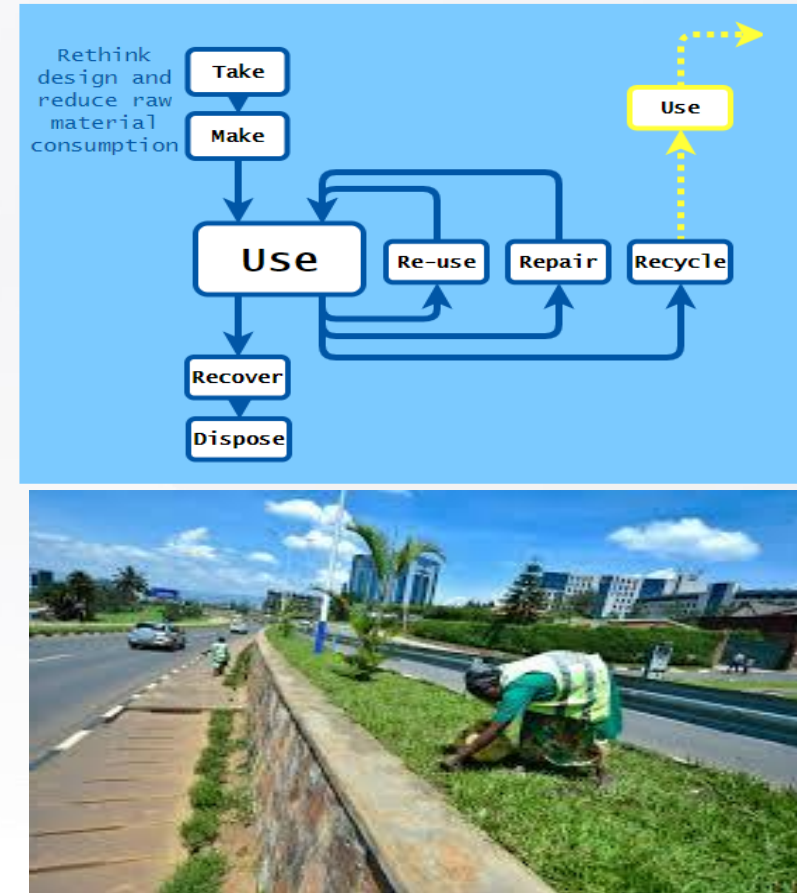
- *The City of Kigali is the capital of Rwanda and is located at Rwanda's geographical heart. Occupying an area of 730km². The average annual precipitation rate is approximately, with an annual average high temperature of 27°C and annual average low temperature of 16°C.*
- *The City of Kigali is composed of three Districts namely Gasabo, Kicukiro and Nyarugenge. Gasabo is the largest district by geographical area at 429.3km², followed by Kicukiro (166.7km²) and Nyarugenge (134km²). The City of Kigali population is 1,745,555.*
- *The districts are also divided into 35 administrative sectors which in turn are divided into 161 Cells. The smallest administrative unit is the village and the City is made up of 1,155 villages.*



II. Kigali's Circular Economy, Resource Efficiency, and Waste Management Framework

- ❑ Republic of Rwanda is one the most advanced African countries in the circular economy transition. Circular economy is a pillar of Rwanda's Green Growth and Climate Resilience Strategy.
- ❑ The City of Kigali' circular economy initiatives are guided by the National Circular Economy Action Plan, which lists the following five sectors, in attaining the Vision 2050 goals.
 - Waste sector, Water, Agriculture ; Construction, and Manufacturing
- ❑ The enablers, including the policy reforms, innovation, finance, and capacity building. The targets include achieving 100% waste valorization and 50% reduction in virgin material use by 2035.
- ❑ With all these initiatives, the City of Kigali has been ranked among the cleanest cities in the World.

Circular Economy System



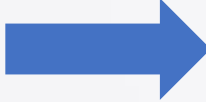
III. Ongoing Circular Economy Initiatives

Waste Sector

- ❑ The estimated population of the City of Kigali as of 2025 is projected to be 1,745,555, with a waste generation rate of 0.56 kg/c.day.
- ❑ The waste composition shown below shows that there is a lot of valorization potential with little residual waste, and the waste is dominated by organics with potential for compost production for agriculture, and biogas production for fuel. The waste also contains plenty of recyclables.

Waste type	Composition (%)
Organics	78%
Papers (including Cardboard)	5.40%
Plastics (PET, HDP, PP, LDP)	6.90%
Loaded diapers	3.30%
Glass	2.10%
Textile	1.70%
Metals (ferrous and Aluminium)	0.80%
Ceramics	0.40%
Wood	0.50%
Others	0.90%

Solid Waste Collection

- The waste collection is privatized.
- ✓ **Collection Zoning :**
 - One sector  One company Since 2013
- ✓ **Schedule of collection:**
 - Commercial and public areas: once a day
 - Residential area: At least once a week.

Mode of Hhd Waste Mgt (EICV 7)	Percentage
Waste collection companies	54.5
Thrown in the household's fields or bushes	31.2
Household compost dumping	13.4
Publicly managed refuse area	0.4
Other model of waste disposal	0.5



Solid Waste Processing & Dumping

The CoK, with the support and partnership of the private sector and development partners, has implemented several waste processing projects, such as.

- The Nduba Sorting and Separation Facility (100 tons/day of recyclables).
 - The Nduba Biowaste Processing Facility. (5 tons/day of organic waste).
 - E-waste collection points.
 - The engineered sanitary landfill. (Ongoing/ WASAC & Mota Engil).
 - Decoupling hazardous waste generation from economic growth in Rwanda (Ongoing 49% progress/ REMA).
 - Piloting incentivised waste collection with RVMs.
 - A weighbridge at Nduba dumpsite for monitoring, review, and verification.
- This has also been accompanied by several awareness campaigns aimed at tackling behavioural changes towards waste management.



Waste Valorisation facilities in The City of Kigali

- ❑ The city of Kigali has emphasized the important fact that to reduce the Green House Gases (GHG) emitted by the Nduba dumpsite, it is very important to support several waste valorisation initiatives. These are summarised below.

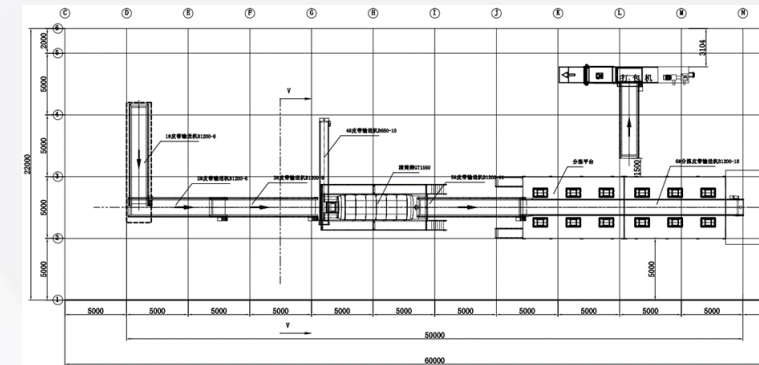
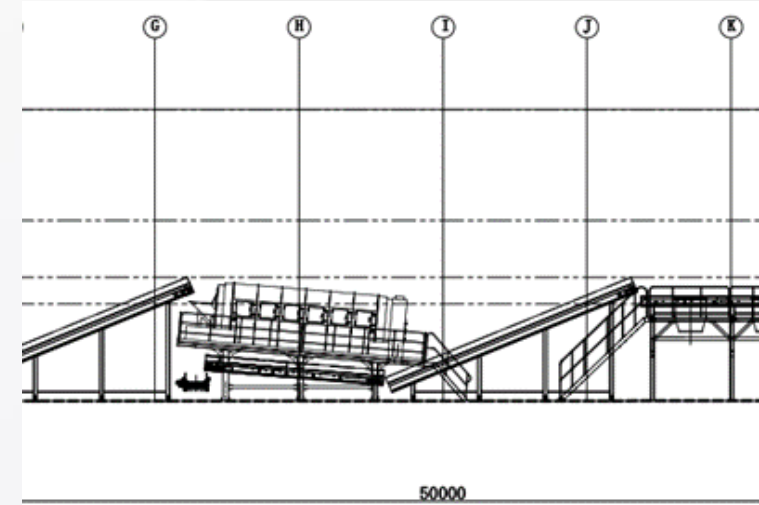
a. The Nduba Sorting and Separation Facility

- ❑ This is a facility with the capacity 100 tons/day, with the capacity to sort and separate recyclables from HDPE, LDPE, PP, PET, Aluminium cans and cardboard and paper.

The process flows as follows;

- pre-sorting to remove any materials not safe for the machinery, conveyer belts and human contact.
- Separation by particle size with the trommel screen of particle size 55mm.
- 12 Manual sorting sections.

All connected with a series of conveyer belts.



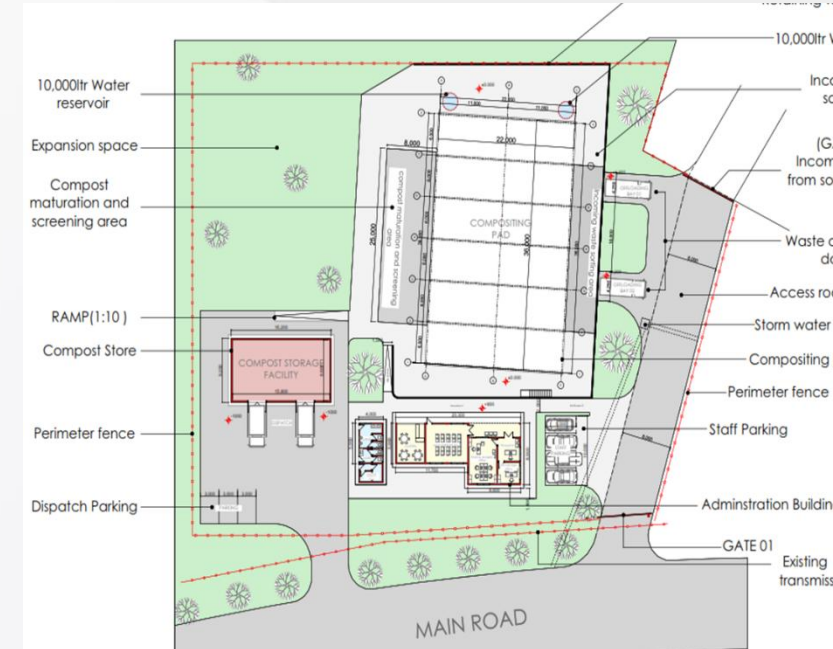
Waste Valorisation facilities in The City of Kigali- cont'd

b. The Nduba Biowaste Processing Facility

- ❑ This is a facility with the capacity of processing 5 tons of organic compost per day.

The processing process is as follows.

- The garbage trucks dump the truck to the pre-sorting zone, where the impurities are removed.
- The waste is then transferred to the 792 m² compost pad using wheelbarrows on the ramps. That can accommodate 15 windrow piles of size 9m (l)x 1.5m (w) x 1.5m (h).
- The temperature and moisture content is regularly monitored, with regular turning and spraying with EM (effective microorganisms) to speed up the composting process to the 45 days, and reduce odour.
- After 45 days the compost undergoes a curing and maturation for 15 days, where it is then sieved/ screened in a trommel screen and packaged in packs of 5 1kg, 5kgs, 10kgs, and 20 kgs.



#KigaliYacu

Waste Valorisation facilities in The City of Kigali- cont

c. The Nduba Weighbridge

- ❑ This is a 60 tonnes capacity weighbridge installed at Nduba dumpsite meant to assist the City of Kigali accurately predict the quantity of waste disposed of at Nduba dumpsite.
- ❑ This was installed with an automated record registration system that is user friendly, and in operation.
- ❑ The trucks follow the existing traffic lights, where upon reaching the weighbridge platform deck the following information is captured; The driver name, vehicle number plate, waste source location, waste composition, gross weight, contact, and the gate fees.
- ❑ Upon returning after dumping the empty weight is determined, where the subtraction returns the weight of the dumped waste.



CITY OF KIGALI

RST NO	:	47	VEHICLE NO	:	RAD555C
MATERIAL	:	IBIBORA	DRIVER	:	XXX
COMPANY	:	AGRUINI			

GROSS Wt:	✓	20 kg	Date:30/08/2023	Time:11:35
TARE Wt:	✓	15 kg	Date:30/08/2023	Time:11:27
NET Wt:		5 kg	FIVE kg	

Charges(1): RM 0 ✓

OPERATOR'S SIGNATURE:

CS Scanned with CamScanner

THANKS FOR WEIGH

NDUBA FACILITIES' LOCATION MAP



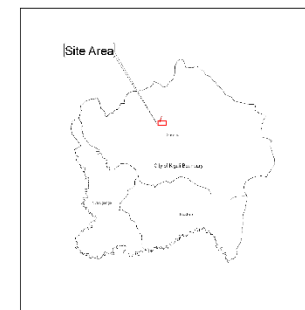
Project:

WASTE TO RESOURCES PROJECT

IMPROVING MUNICIPAL SOLID WASTE AND HAZARDOUS
WASTE MANAGEMENT IN RWANDA

Map Layout of Facilities at Nduba

4792700



4792600

Legend

- Nduba Waste Sorting and Separation Facility (NWSSF)
- Nduba Biowaste Facility (NBF)
- Nduba Weighbridge (NW)
- Main Road
- Tarmaced Road
- Weighbridge
- WB Control Room
- Compacted Murrum
- Concrete Paths
- Paver blocks
- Road Median
- Landscaped area

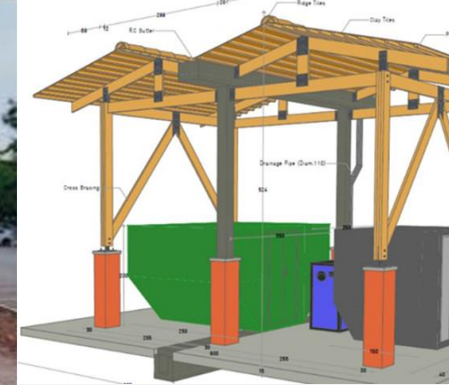
1 cm = 4 m



Solid Waste Processing & Dumping

Smart waste collection

- Smart dustbins, or sensor-fitted garbage installed in different locations of the city(Reverse Vending Machines).
- Real-time monitoring: Sensors in the bins monitor waste levels and send notifications to waste collectors.
- Different colored bins for different types of waste, such as green for biodegradables, blue for recyclables, and gray for electronics.
- The source separation also further enhances waste valorization by making waste processing more efficient.



Green Jobs in the waste sector.

The jobs range from both skilled and unskilled labour. The table below highlights the created jobs in the waste sector from waste collection and processing.

Activity	Number of staff
City Cleaning & Waste Gathering in public places	1829
Waste collection companies	1860
Nduba biowaste processing facility	22
Nduba dumpsite	116
Nduba sorting and separation facility	18



Other sector overviews.

Agriculture

Increased urban compost use has been scaled up, especially in landscaping and among commercial farmers.

Construction

Energy-efficient buildings have also witnessed a rise in recent times in the City of Kigali.

Water

Greywater reuse has seen increased uptake, especially in commercial and government institution buildings, especially in irrigating gardens.

Transport

E-bikes with batteries that can be reused several times, with high mileage and sufficient refills, have also picked up in the City of Kigali.

Social Inclusion & Innovation

Youth-led recycling and compost cooperatives

- Gender-sensitive circular entrepreneurship has picked up with several waste valorization start-ups being youth-led initiatives.
- Circular education in schools and vocational centers in the City of Kigali is a target for the City of Kigali, with several schools being granted school education visits to the valorization facilities in the City of Kigali.
- Innovation hubs supporting circular startups like Norsken have also increased the awareness.



Call for Action

- ❑ By adopting circular solution, resource efficiency, and sustainable waste management model, as cities we can reduce landfill dependency, lower greenhouse gas emissions through advanced recovery technologies (use renewable energies) , create green jobs, and foster economic growth.



**THANK YOU
MURAKOZE**