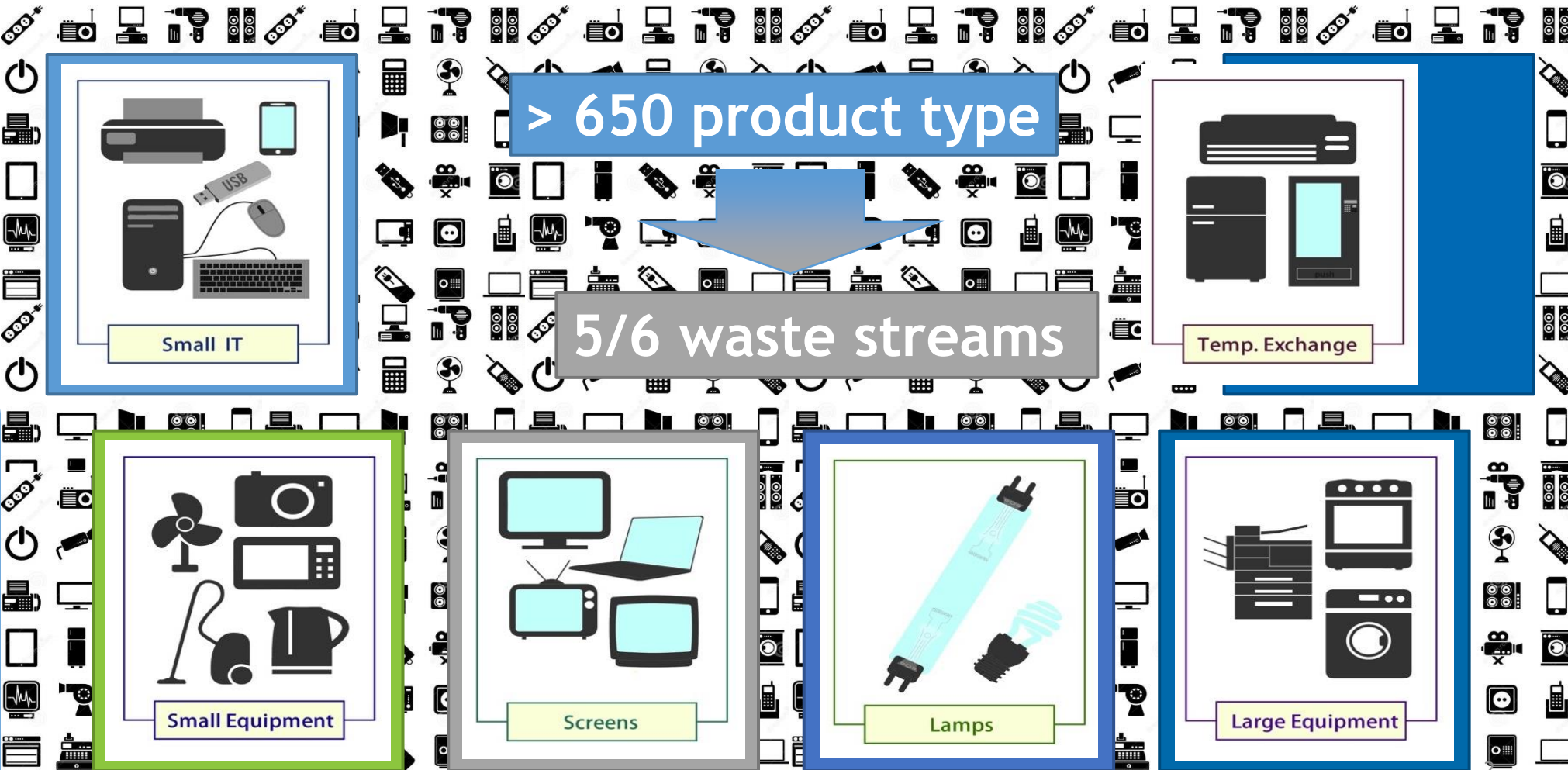


Opportunities in the Circular Economy of E-waste management Case of Rwanda

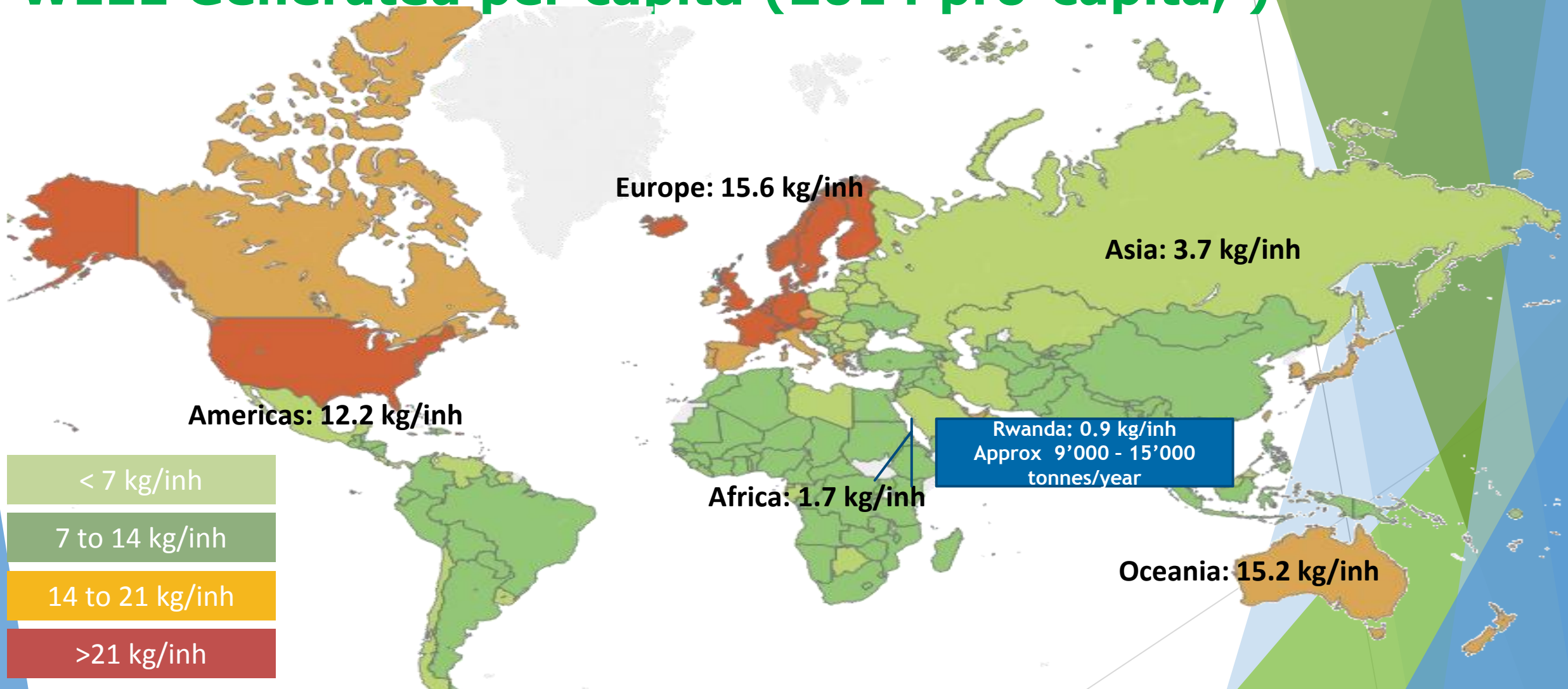
Olivier MBERA
CGM Enviroserve Rwanda



Fastest growing stream of waste worldwide

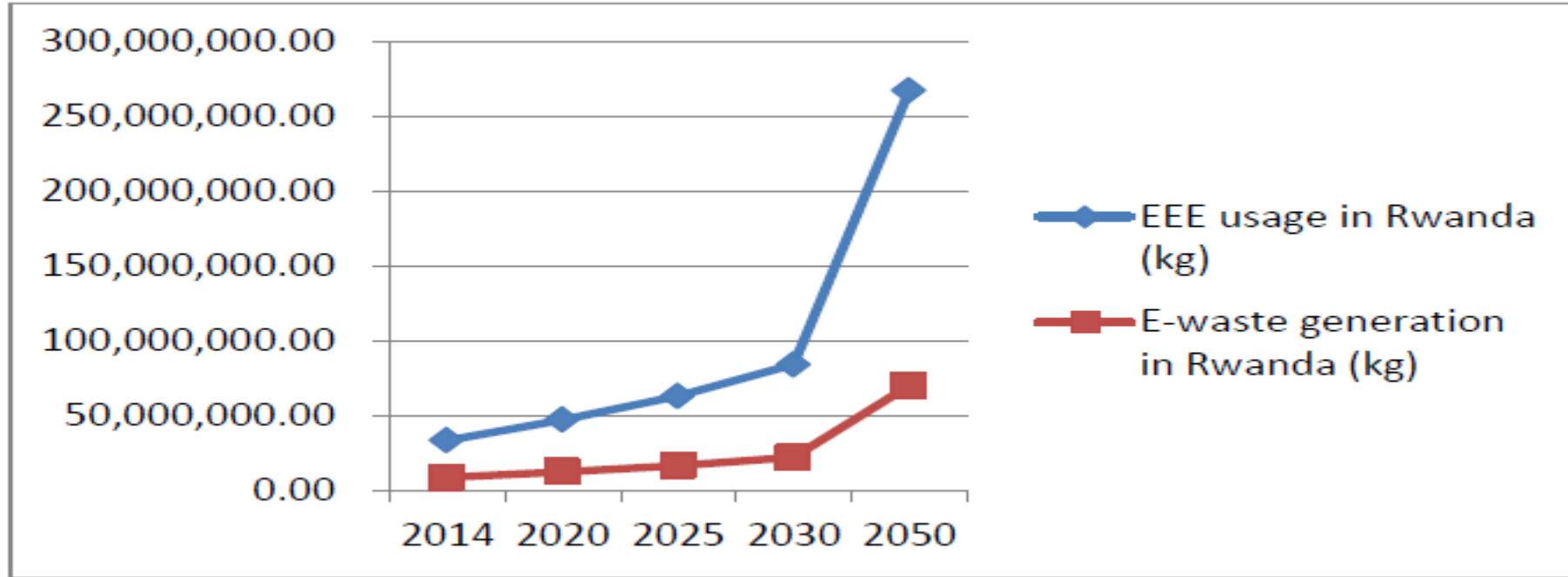


WEEE Generated per capita (2014 pro-capita,)



* Assumed the EU scope (max coverage)

Trends of E-waste in Rwanda



	2014	2020	2025	2030	2050
EEE usage in Rwanda (kg)	33,449,623.04	47,309,164.30	63,154,890.07	84,307,981.33	267,741,393.33
E-waste generation in Rwanda (kg)	8,790,255.66	12,432,416.62	16,596,528.74	22,155,368.07	70,359,994.68



Annual growth rate of 5.95%

Legal Framework for E-waste management in Rwanda

- ▶ National sanitation Policy Approved by the Cabinet in 2016
- ▶ National E-waste Policy (2017)
- ▶ Environmental law (Revised to include article 16 - E-waste management) Approved by the Parliament in 2018
- ▶ E-waste Regulations Approved by the board of the Regulatory Authority (RURA) in 2018
- ▶ Rwanda is signatory to various international conventions (such as Basel convention, Stockholm convention , Bamako convention ,etc.)

• **Institutional Framework**

Policies & strategies

- Ministry of Youth and ICT (MYICT)
- Ministry in charge of Trade and Industry
- Ministry in charge of Health
- Ministry in charge of State assets
- Ministry in charge of Education

Regulators

- Rwanda Utilities Regulatory Authority (RURA)
- Rwanda Environmental Management Authority (REMA)
- Rwanda Standards Board (RSB)

Partners

- Private Sector
- EEE Users
- Producers
- NGO and International organisation

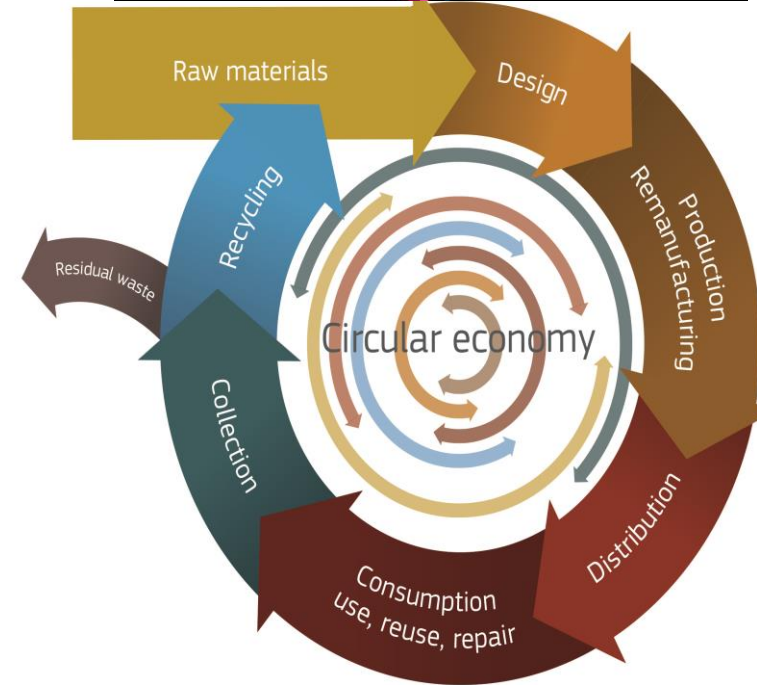
Infrastructure for E-waste Management in Rwanda

- ▶ The government of Rwanda has established a state of art e-waste dismantling and recycling facility
- ▶ The dismantling facility has attracted private sector investment and now operated under a PPP model, in partnership with Enviroserve Rwanda a subsidiary of an Emirati Recycling Powerhouse : Enviroserve services LLC.
- ▶ Enviroserve Rwanda in process of Establishing collection points/ Centres around the country



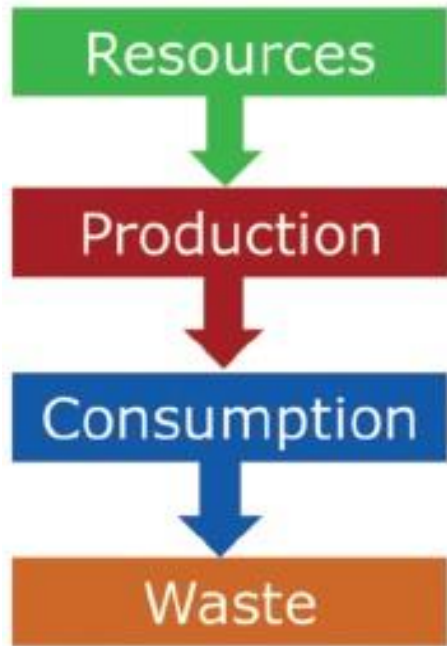
What's Circular Economy

- A regenerative Economic system
- Transition from “take-make-dispose” models to “take-make-use-regenerate” resource model
- Aims to redesign the production and consumption systems
- Emphasis on social, environment ,economic and cultural aspects

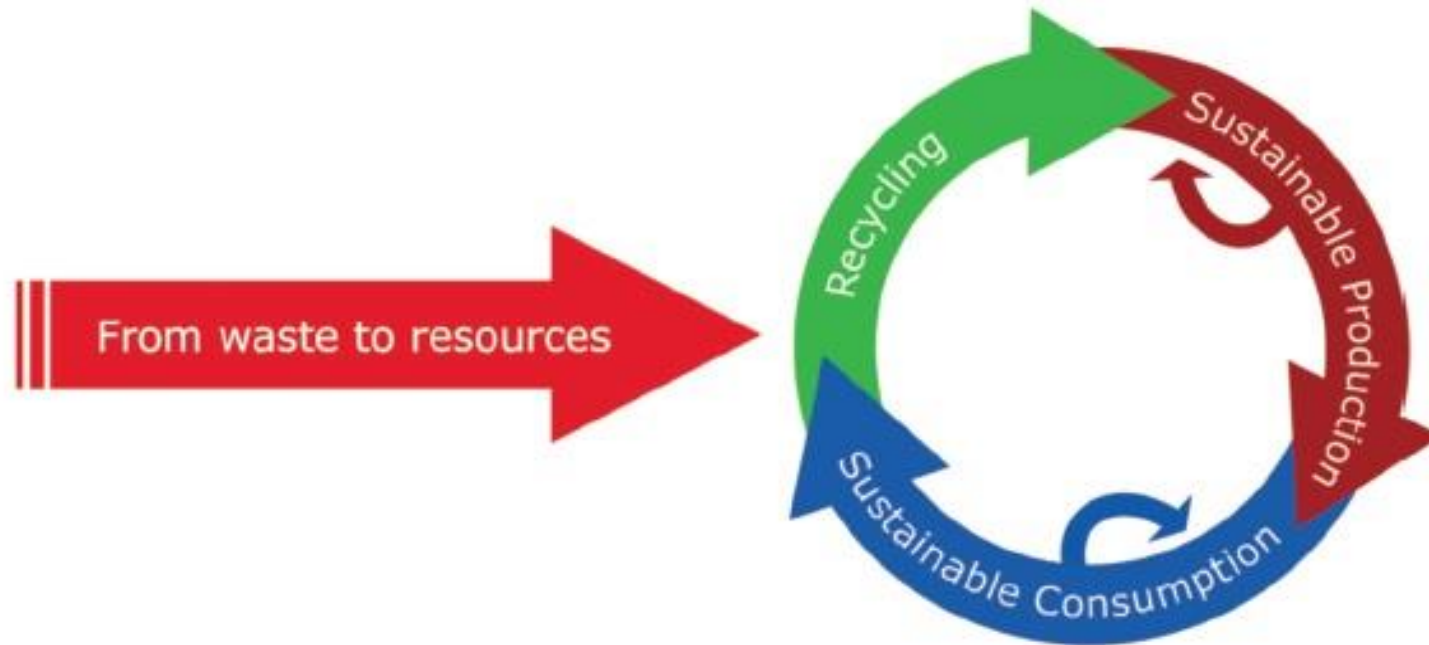


From Linear to a Circular Economy

Linear economy



Circular economy



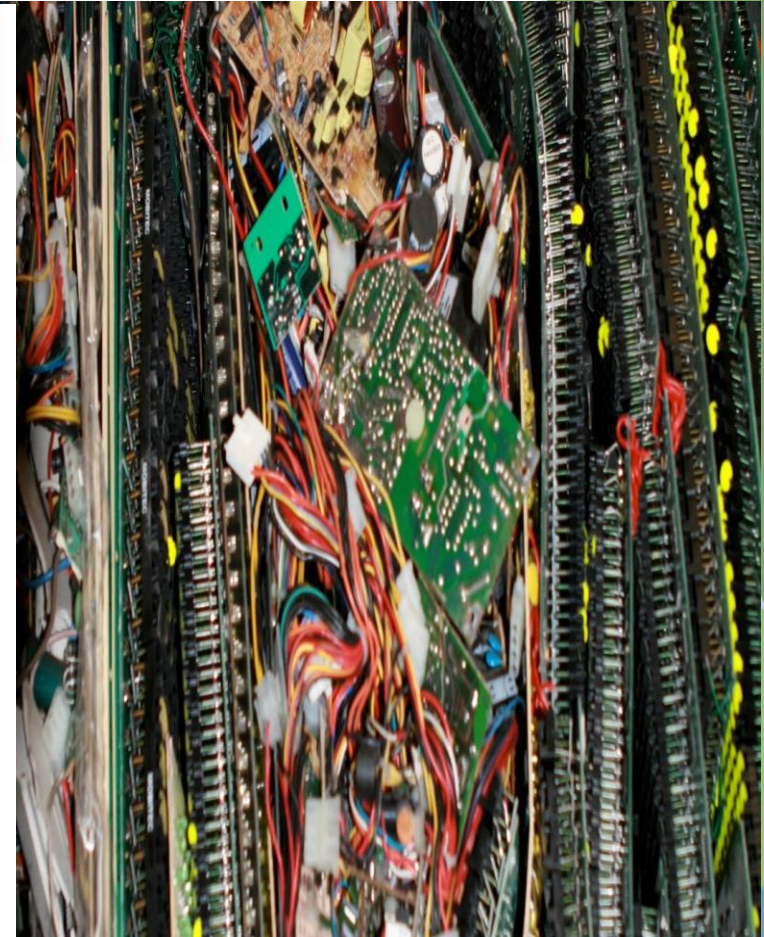
Circular Economy of E-waste management

The CE of e-waste is driven by:

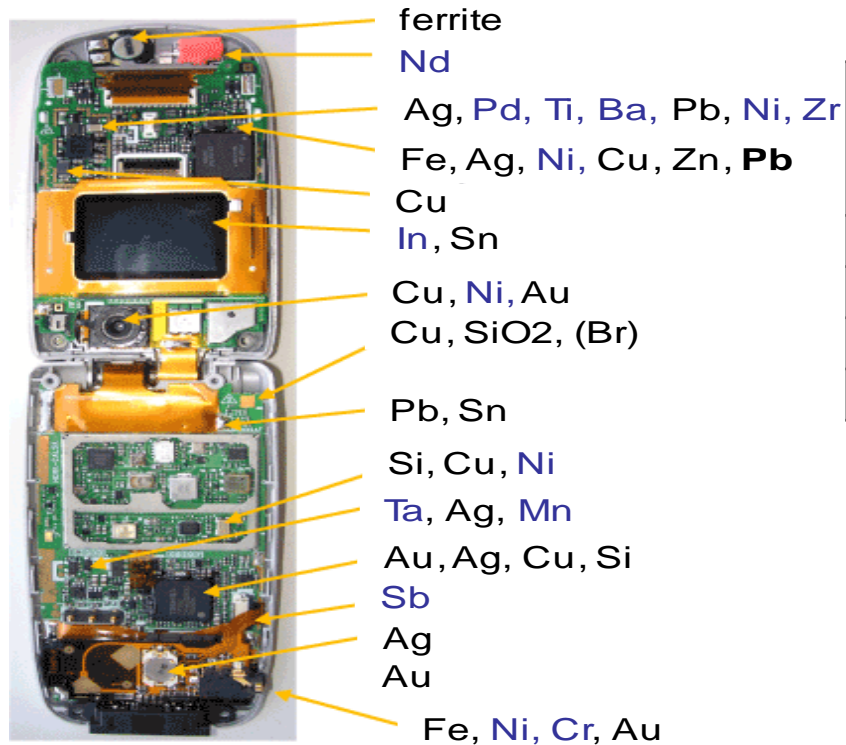
- Potential value of raw materials (Fe, Cu, Al, Ag, Au, Pd, Plastics, etc.
- High possibility of resource recovery
- Need for reduction in primary mining and pollution prevention
- Need for green jobs

Source: UNU report 2014

Material	kilotons (kt)	Million €
Fe	16,283	3,582
Cu	2,164	9,524
Al	2,472	3,585
Ag	1.6	884
Au	0.5	18,840
Pd	0.2	3,369
Plastics	12,230	15,043



Valuable Metals That Could be Recovered from a Mobile Phone



Quantity of Non-ferrous Metals Included in One Mobile Phone (Unit: g)

Gold	0.028
Silver	0.189
Copper	13.71
Palladium	0.014

Elements of CE in the policy & legal framework for e-waste management in Rwanda

- ▶ **National sanitation policy** – an umbrella policy that recommends specific e-waste management policy
- ▶ **National E-waste Policy** provides guidance and policy direction on the appropriate legal and regulatory instruments for e-waste management
- ▶ **Environmental law (article 16 – E-waste management)** approved by the Parliament based on the principle of producer responsibility provides the legal framework for the management of e-waste and the legal obligations to Producers and other institutions. (Dialogue with Producers are key to ensure Redesign and Remanufacture)
- ▶ **E-waste Regulations** approved by the board of the regulatory authority , lay out the roles of the various actors, in particular producers and recyclers, emphasis on repair and refurbishment and sets minimum requirements for licencing and sanctions and penalties for non-compliance. (Integrating the informal sector to ensure circulaty)

Enviroserve Rwanda CE Business Model (6Rs)

- ▶ Awareness & Training to promote reuse and reduce
- ▶ Refurbishment of equipment (especially for schools)
- ▶ Professional repair and training of informal sector
- ▶ Dismantling and recycling of e-waste
- ▶ Partnership with Producers



Opportunities in CE of e-waste (General)

Environmental

- Resources embedded in e-waste
- Pollution prevention
- Reduction in primary mining

Economic

- Green Jobs
- Competitiveness of Industry
- Access to state of the art technologies
- Improvements in resource productivity

Social

- Lifestyles of health and sustainability
- Mainstreaming of marginalized populations



For a Green and Climate Resilient Rwanda

As Rwanda positions itself as a technology hub, there has been an increase in e-waste. In response, the Ministry of Trade and Industry partnered with the Rwanda Green Fund to build Africa's second state of art e-waste dismantling and recycling facility at the Bugesera Industrial Park.

Since it began operations, the e-waste recycling facility has processed more than 120 tonnes of material and prevented 279 tonnes of carbon dioxide equivalent emissions from entering the atmosphere.

The project has attracted investment from an international private partner, with a payback period of ten years and possibilities for expansion.

RETURN ON INVESTMENT AFTER SIX MONTHS OF OPERATION

120

tonnes of e-waste
collected

400

computers
refurbished
for schools

279

tonnes of carbon
dioxide equivalent
emissions
mitigated

60

tonnes of e-waste
dismantled

Thanks to the fund's investment and implementation by the Ministry of Trade and Industry, Rwanda has now established an e-waste recycling facility, with the capacity to employ more than 1,000 people - making it the second state of art e-waste dismantling and recycling facility in Africa.

RETURN ON INVESTMENT AFTER SIX MONTHS OF OPERATION

400

computers
refurbished
for schools

300

green jobs created
(with 700 more in
the pipeline)

60

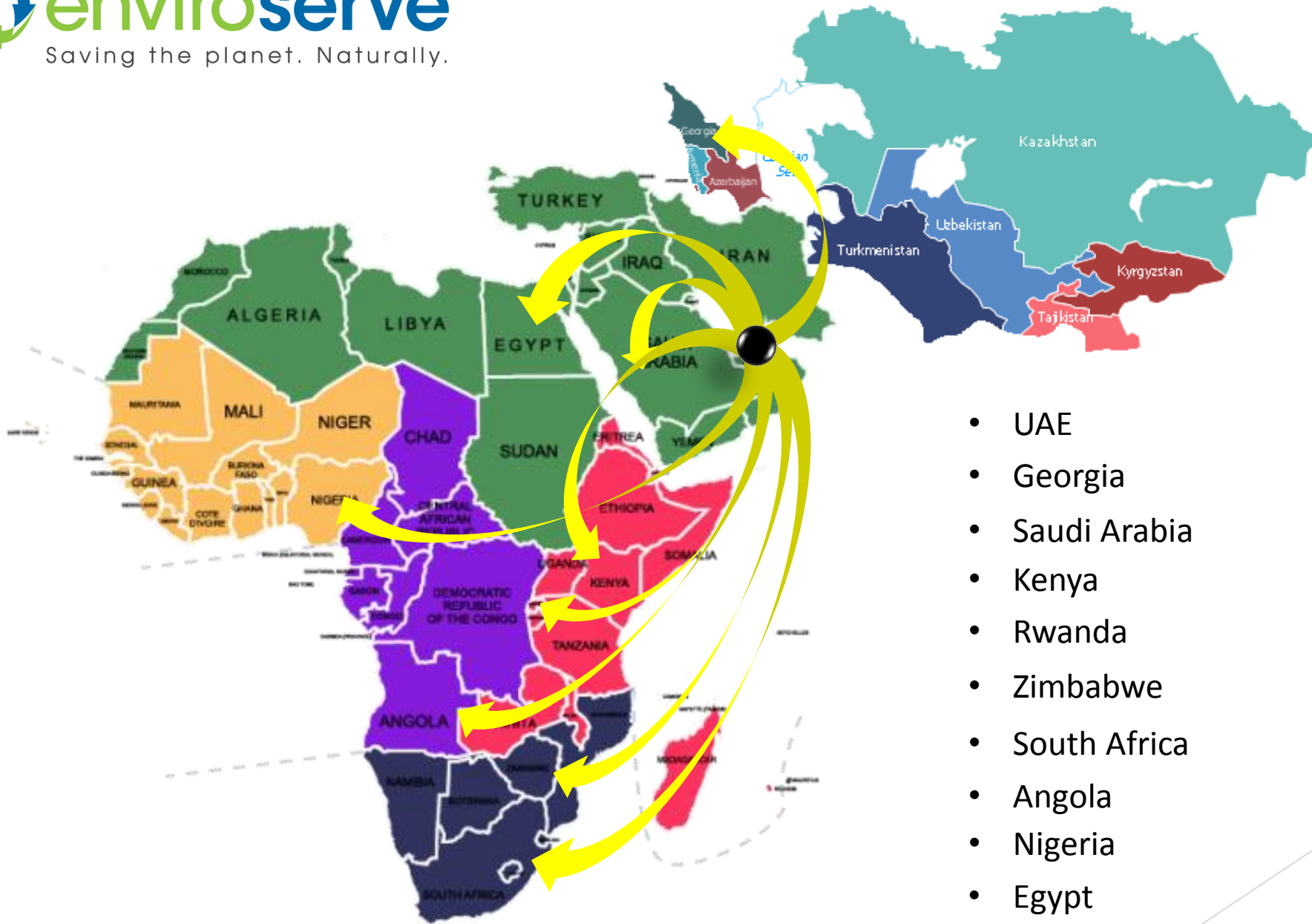
tonnes of
e-waste
dismantled



I used to work at an electronic equipment repair shop. Some of the materials we used were dangerous for the environment and our health. Now that I work at the e-waste facility, I am proud to be preventing e-waste from harming people and our environment."



Jean de Dieu Munyankindi



- UAE
- Georgia
- Saudi Arabia
- Kenya
- Rwanda
- Zimbabwe
- South Africa
- Angola
- Nigeria
- Egypt

THE RECYCLING HUB



- FIRST OF ITS KIND IN MIDDLE EAST
- DUBAI INDUSTRIAL PARK
- COMPLETION APRIL 2018
- 39.000 TONS ANNUALLY
- ZERO LIQUID AND AIR EMISSION



The background features abstract geometric shapes, primarily triangles, in various shades of blue and green. These shapes are layered and overlap, creating a dynamic, modern look. The colors range from light sky blue to deep forest green. The overall composition is clean and minimalist, with the text centered in the white space.

THANK YOU!

SAVE THE PLANET. NATURALLY.