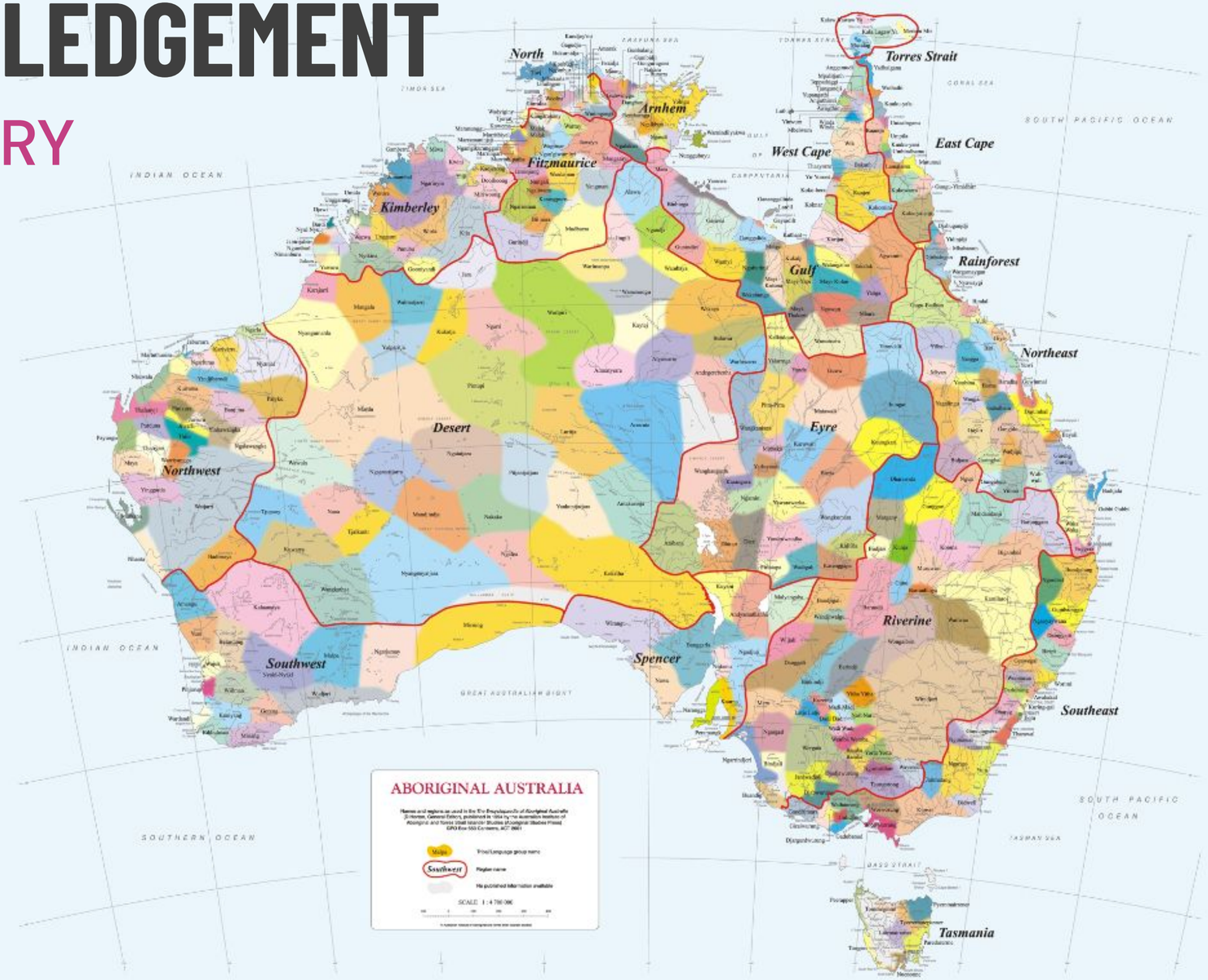
CIRCULAR ECONOMY

QV Centre: Opportunities for Circular Mixed-Used Precinct

ACKNOWLEDGEMENT

OF COUNTRY



ZOOM ETIQUETTE

PLEASE MUTE YOUR MICROPHONE WHEN YOU ARE NOT SPEAKING

PANIC STATIONS = TEXT CAMERON 0450064941 OR USE CHAT FUNCTION

CHAT FUNCTION THAT YOU CAN USE, WE WILL SHARE REFERENCES

NAME ON SCREEN, BEHIND OWN COMPUTER, HECTIC ON TIME

WE ARE A BOUTIQUE CIRCULAR ECONOMY CONSULTANCY ON A MISSION TO TRANSFORM ECONOMIES TO SERVE PEOPLE AND NATURE

SOME OF OUR CLIENTS

GOVERNMENT

Australian Government
GREEN INDUSTRIES SA
CITY OF MELBOURNE
LGAQ
clarence VALLEY COUNCIL
LAKE MACQUARIE CITY
BRISBANE CITY
CITY OF SYDNEY
Queensland Government
Queensland Government Queensland Health
QUEENSLAND TREASURY CORPORATION
Sustainability Victoria
NSW GOVERNMENT SUSTAINABILITY ADVANTAGE

MINING

AngloAmerican
BHP
SOUTH32
FMG Fortescue The New Force in Iron Ore
RioTinto

UTILITIES

Hydro Tasmania
UrbanUtilities

RETAIL

QIC
QV melbourne
L'ORÉAL

PROPERTY & INFRASTRUCTURE

Charter Hall
dexus
FRASERS COMMERCIAL TRUST
lendlease
mirvac
Stockland

OTHER

acciona
aurecon
AURIZON
BNE it all begins here
cefc
COEX CONTAINER EXCHANGE
USC

COREO TEAM

Ashleigh Morris
CEO

Cameron Kaufman
Consultant

Felicity Millard
Consultant

PROJECT OVERVIEW

A demonstration of circular material flows within a mixed-use precinct.

1. Waste audit
2. Workshop 1
3. Circular Economy Maturity Assessment
4. Workshop 2
5. Material pathway for chosen stream

AGENDA

HOW THINGS WILL RUN

Circular economy education
QV today
Break
Waste audit (process & results)
Break
Collaboration Session
Next steps & close

PRACTICE POLL

MENTI CODE: 7953 7018

Practise Question - What sector are you representing today?

INTRODUCTION & FUN FACT

POLL

The creation phase

POLL

The production and consumption phase

POLL

The disposal phase

THE LINEAR ECONOMY

VS.

THE CIRCULAR ECONOMY

THE LINEAR ECONOMY
AN INTERCONNECTION OF THREE THINGS

1

FOSSIL FUELS
Providing cheap energy

2

CHEAP CREDIT
Expanding buying power to the masses

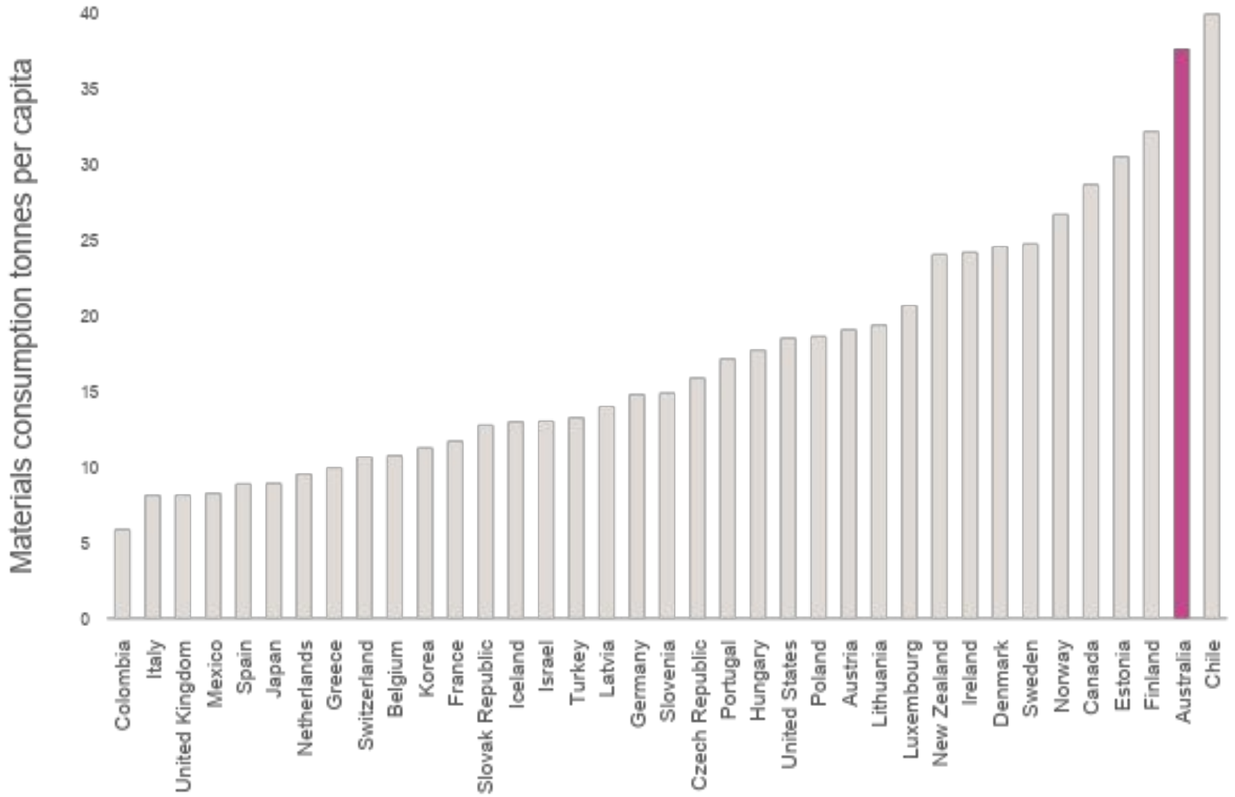
3

ECONOMIES OF SCALE
Producing and consuming more and more

WE EXTRACT AND USE A LOT OF RESOURCES

Australia extracts and uses 38 tonnes of primary resources per capita each year

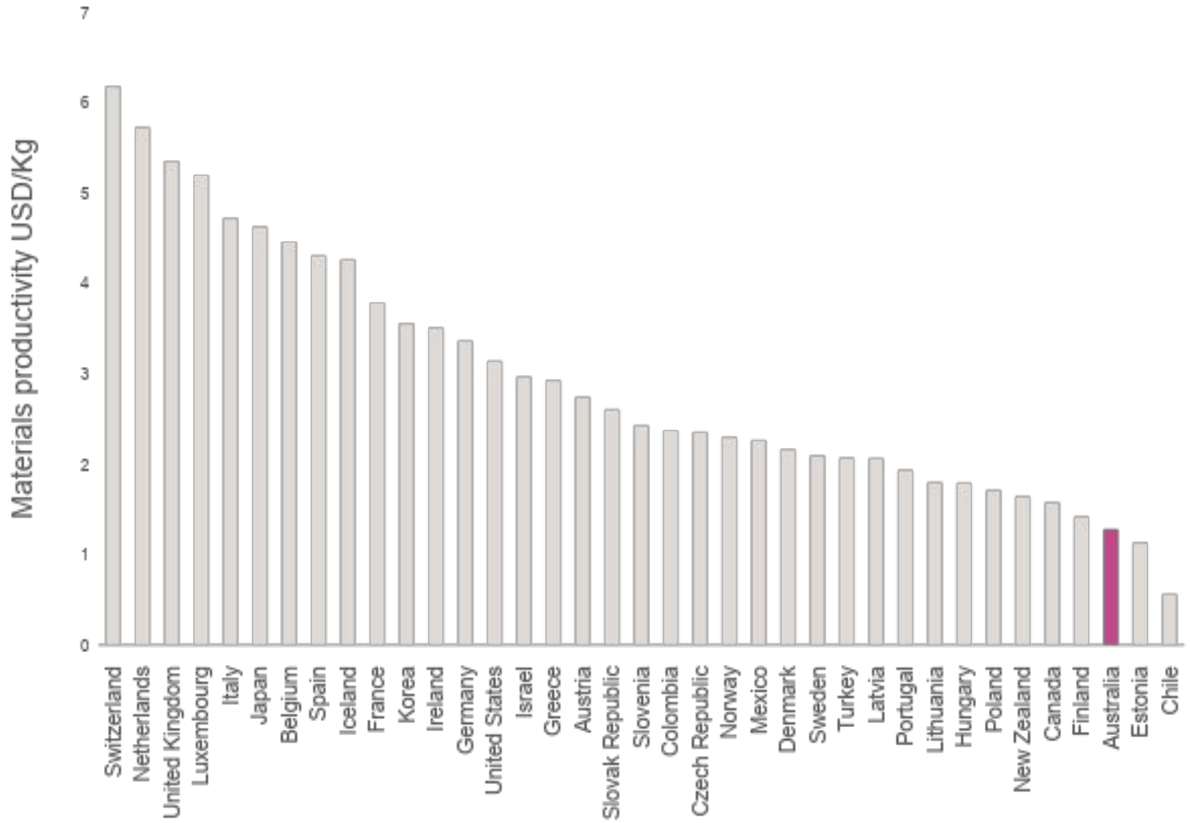
2 x the OECD benchmark



BUT HAVE LOW MATERIAL PRODUCTIVITY RATES

We generate only US$1.28 of output for every kg of material consumed

Less than half the OECD benchmark



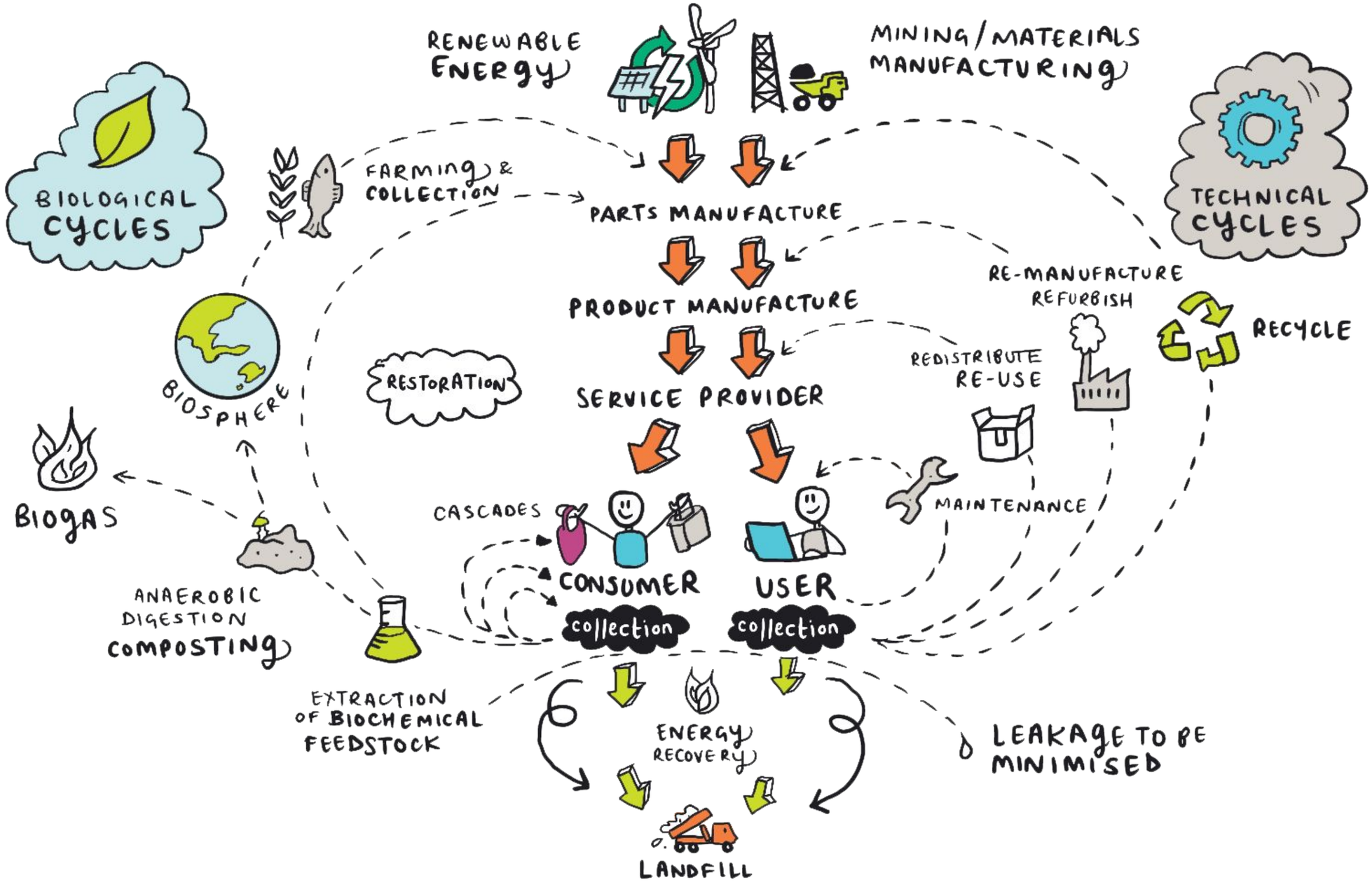
SOURCE: OECD 2019

coreo.com.au

WHAT IF...

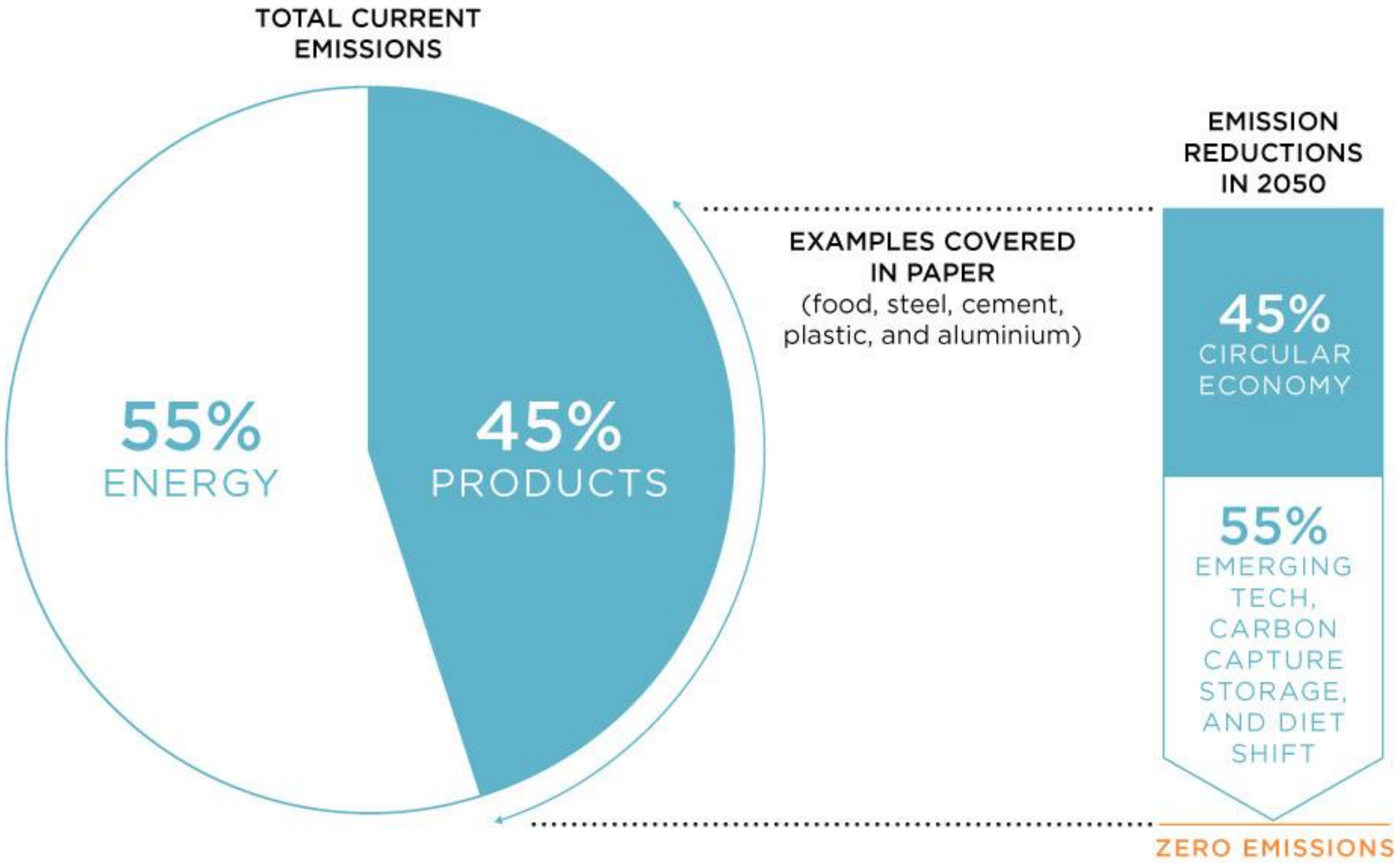
BOTH SCALE AND THE CONCEPT OF SELLING MORE AND MORE GOODS COULD BE CHALLENGED PROFITABLY?

- A circular economy aims to redefine growth
- It is about values and value creation
- It is an economic model that is designed to be restorative and regenerative


RENEWABLE ENERGY
MINING / MATERIALS MANUFACTURING
BIOLOGICAL CYCLES
TECHNICAL CYCLES
FARMING & COLLECTION
PARTS MANUFACTURE
PRODUCT MANUFACTURE
SERVICE PROVIDER
RE-MANUFACTURE REFURBISH
RECYCLE
REDISTRIBUTE RE-USE
BIOSPHERE
RESTORATION
BIOGAS
CASCADES
MAINTENANCE
CONSUMER
USER
ANAEROBIC DIGESTION COMPOSTING
collection
collection
EXTRACTION OF BIOCHEMICAL FEEDSTOCK
ENERGY RECOVERY
LEAKAGE TO BE MINIMISED
LANDFILL

"THE CIRCULAR ECONOMY ISN'T ABOUT ONE MANUFACTURER CHANGING ONE PRODUCT, IT IS ABOUT ALL OF THE INTERCONNECTED COMPANIES AND GOVERNMENTS THAT FORM OUR INFRASTRUCTURE AND ECONOMY COMING TOGETHER... IT'S ABOUT RETHINKING THE OPERATING SYSTEM ITSELF."

– Dame Ellen MacArthur



Underpinned by a transition towards renewable energy, a circular economy can help tackle the overlooked 45% of emissions by transforming the way goods are made and used.

THREE PRINCIPLES OF A

CIRCULAR ECONOMY

1 **DESIGN OUT WASTE**
AND POLLUTION

2 **KEEP PRODUCTS & MATERIALS IN USE**
AT THEIR HIGHEST VALUE FOR AS LONG AS POSSIBLE

3 **REGENERATE NATURAL SYSTEMS**

FIVE BUSINESS MODELS OF A

CIRCULAR ECONOMY

Resource Recovery

Circular Supplies

Product Life Extension

Sharing Model

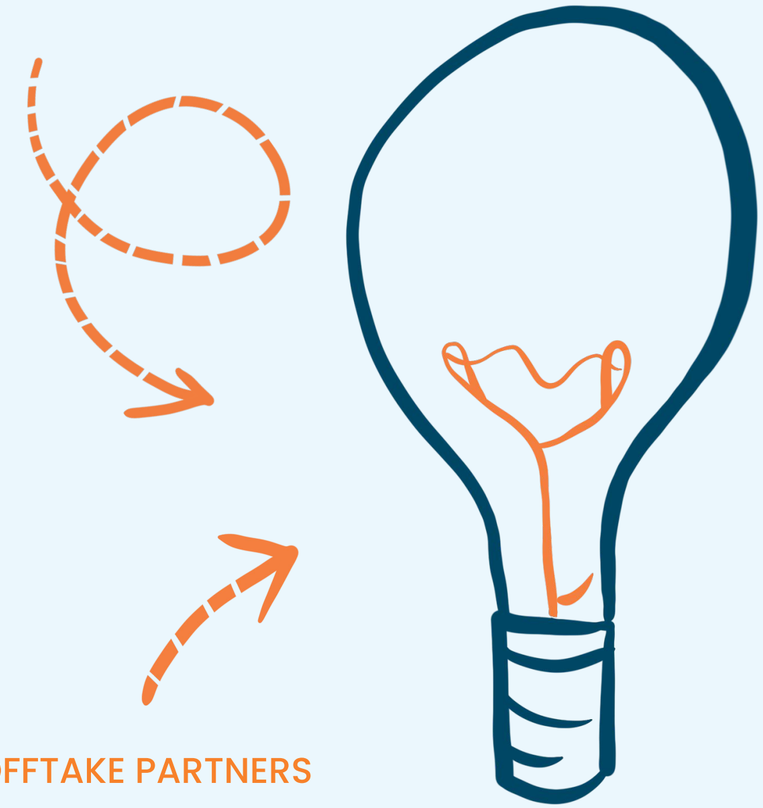
Product As A Service

RESOURCE RECOVERY

Leverage technology
to recover and reuse resource outputs.

Aim to eliminate material leakage
and maximise economic value.

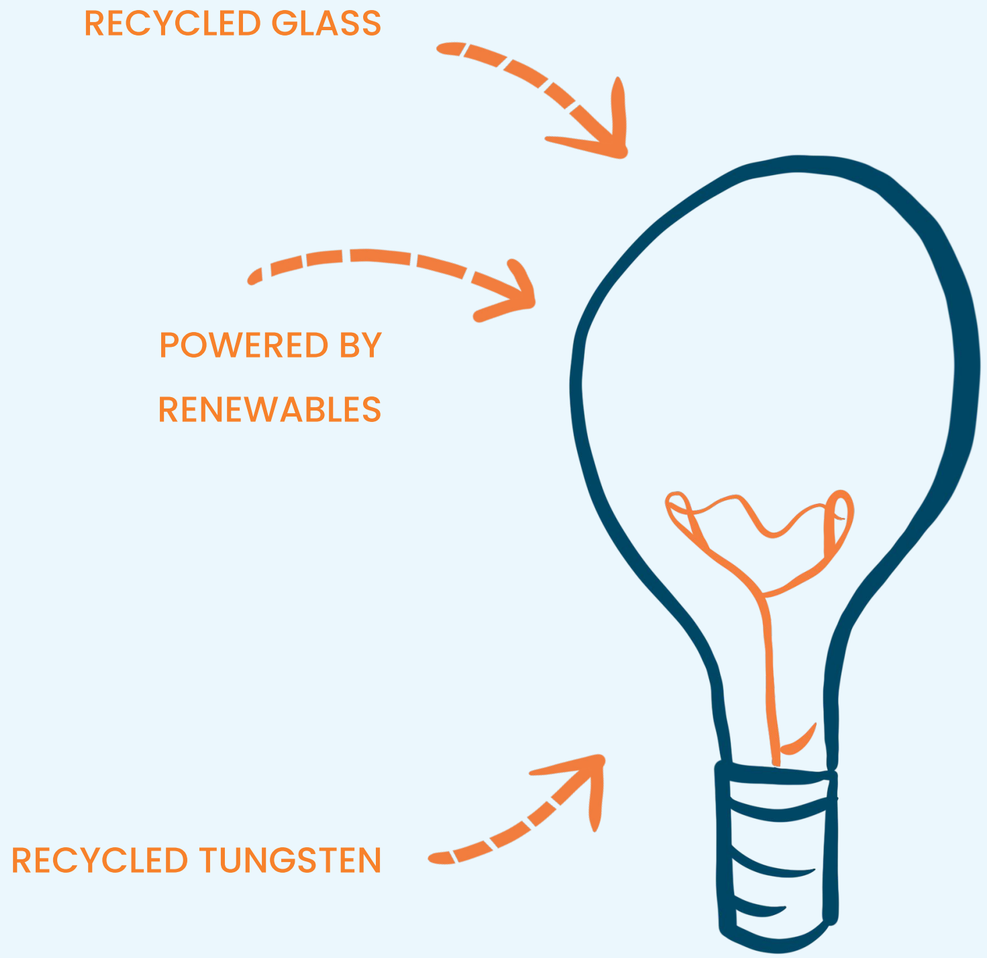
DESIGN FOR DISASSEMBLY



IDENTIFY OFFTAKE PARTNERS
TO CLOSE THE MATERIAL LOOPS

CIRCULAR SUPPLIES

Replace traditional material inputs with bio-based, renewable, or recovered materials. Reduce demand for virgin resource extraction in the long run.



PRODUCT LIFE EXTENSION

Extend the life cycle of products and assets to ensure they remain economically useful.

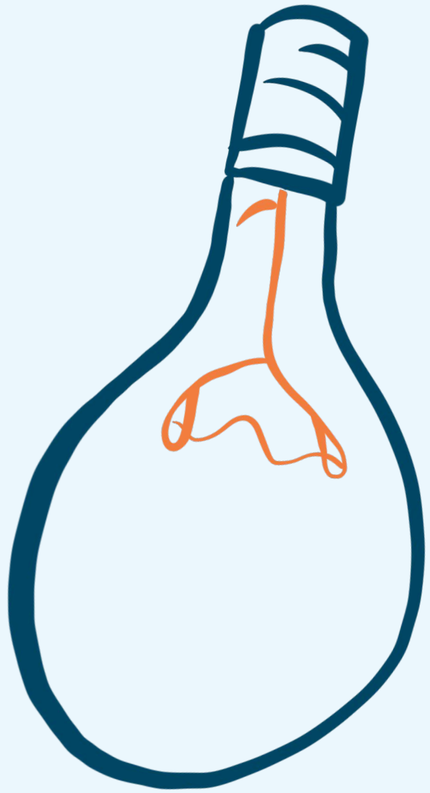
EVER HEARD OF THE CENTENNIAL BULB?

This is a bulb that has been burning continuously for **116 YEARS!**

LEDS

SHARING PLATFORMS

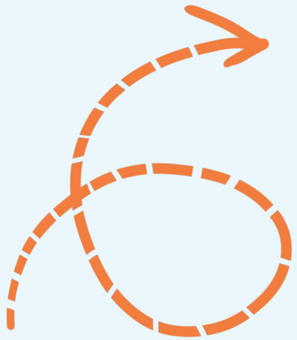
Sharing of under-utilised products can reduce demand for new products and their embedded raw materials.

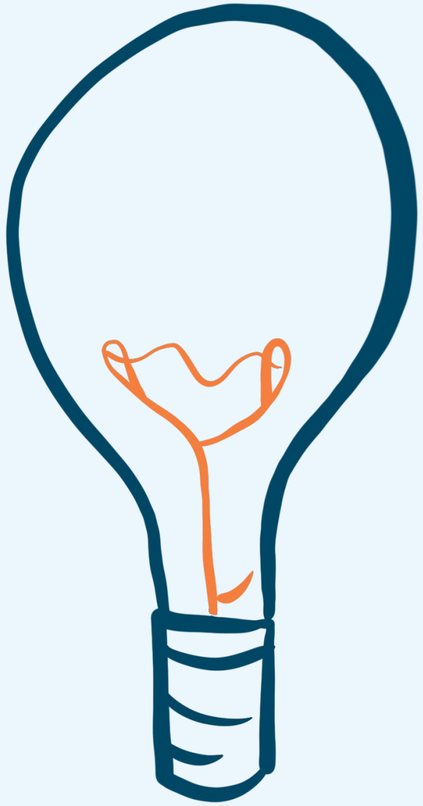


CAN WE ALL STAND UNDERNEATH IT?

PRODUCT AS A SERVICE

Customers use products through a lease or PAY-FOR-USE arrangement versus the conventional approach to ownership.





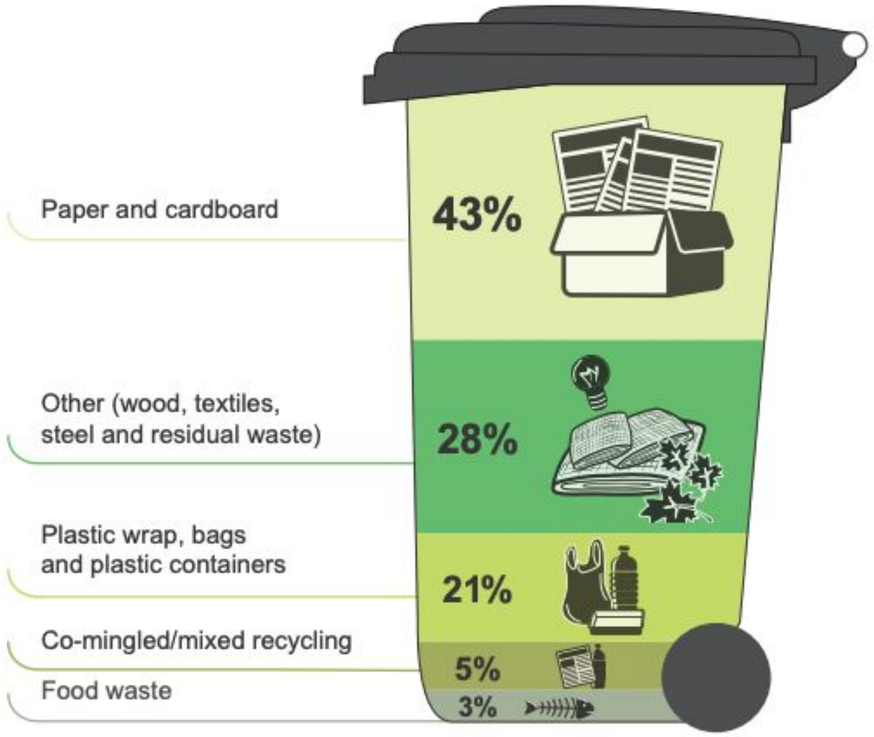
WHY BUY THE BULB WHEN
ALL YOU WANT IS THE LIGHT?

BREAK

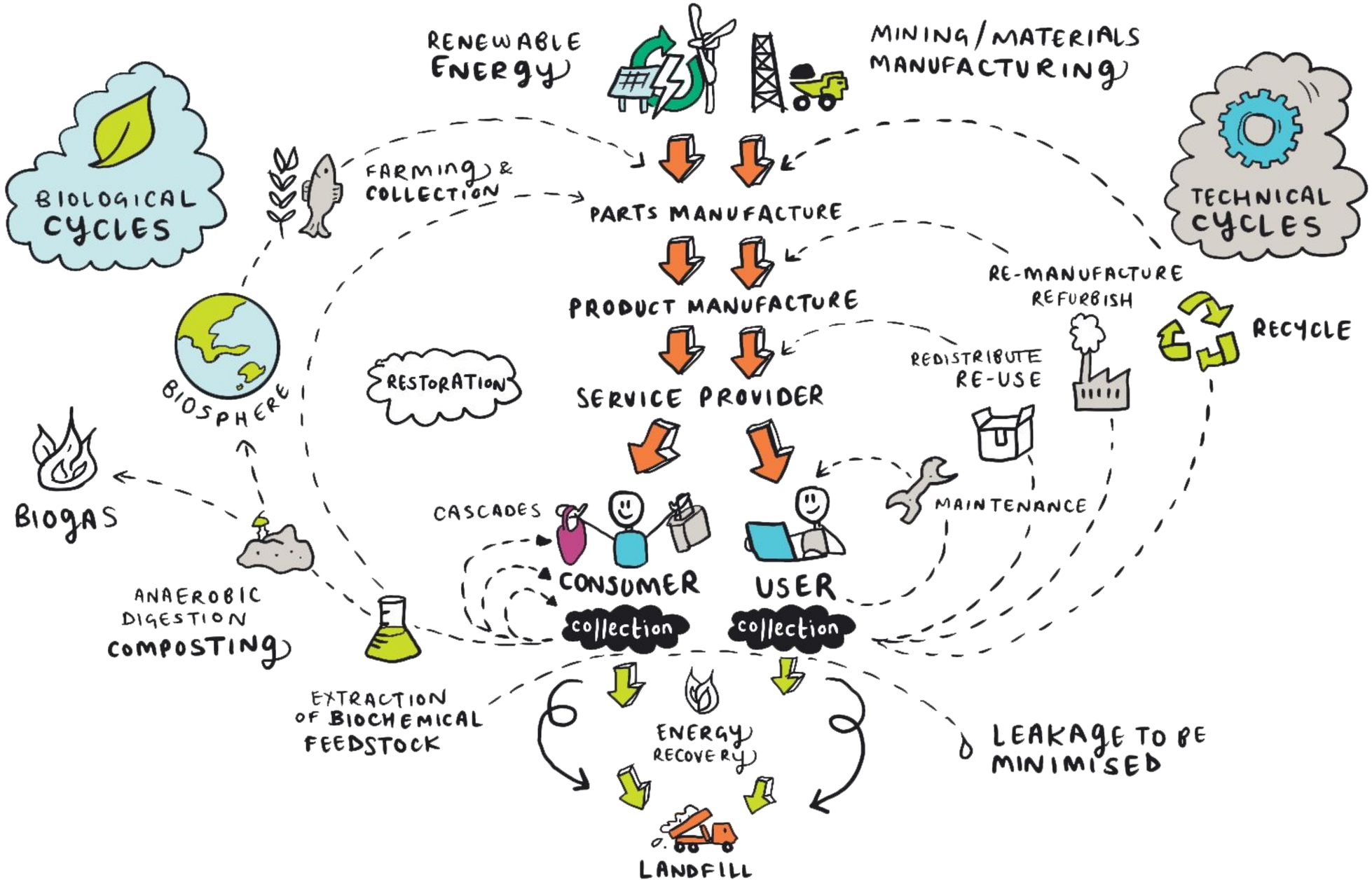
QV TODAY

- QV retail, 180 & 222 Lonsdale Street.
- 137,500 sqm lettable
- 3 connecting buildings
- Over 120 retail and 9 corporate customers

Bins in Dock 2, QV Centre



Composition of an average retail bin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collection
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EXTRACTION OF BIOCHEMICAL FEEDSTOCK
ENERGY RECOVERY
LEAKAGE TO BE MINIMISED
LANDFILL

WASTE AUDIT

POLL

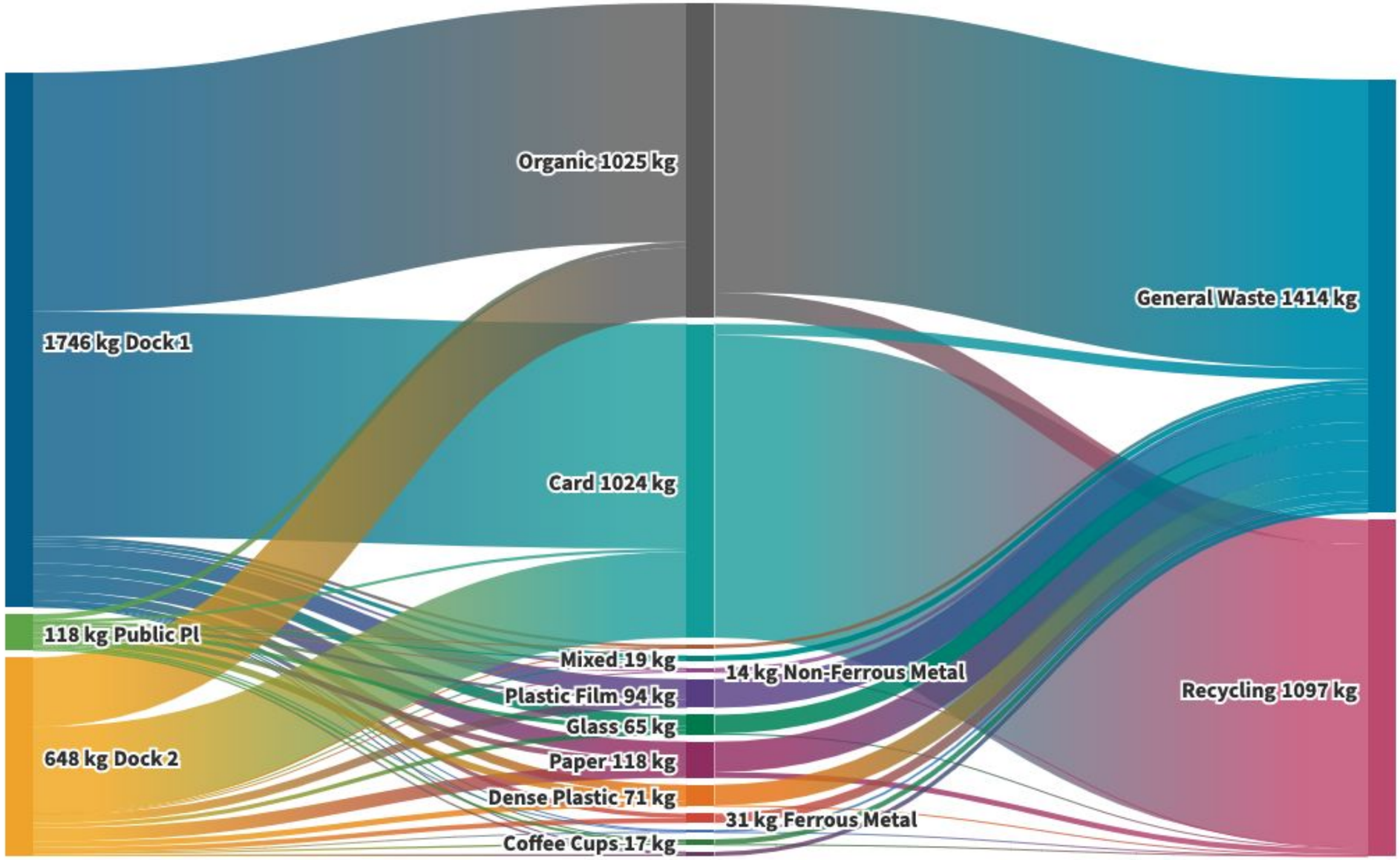
What do you think is the largest waste stream at the QV centre?

POLL

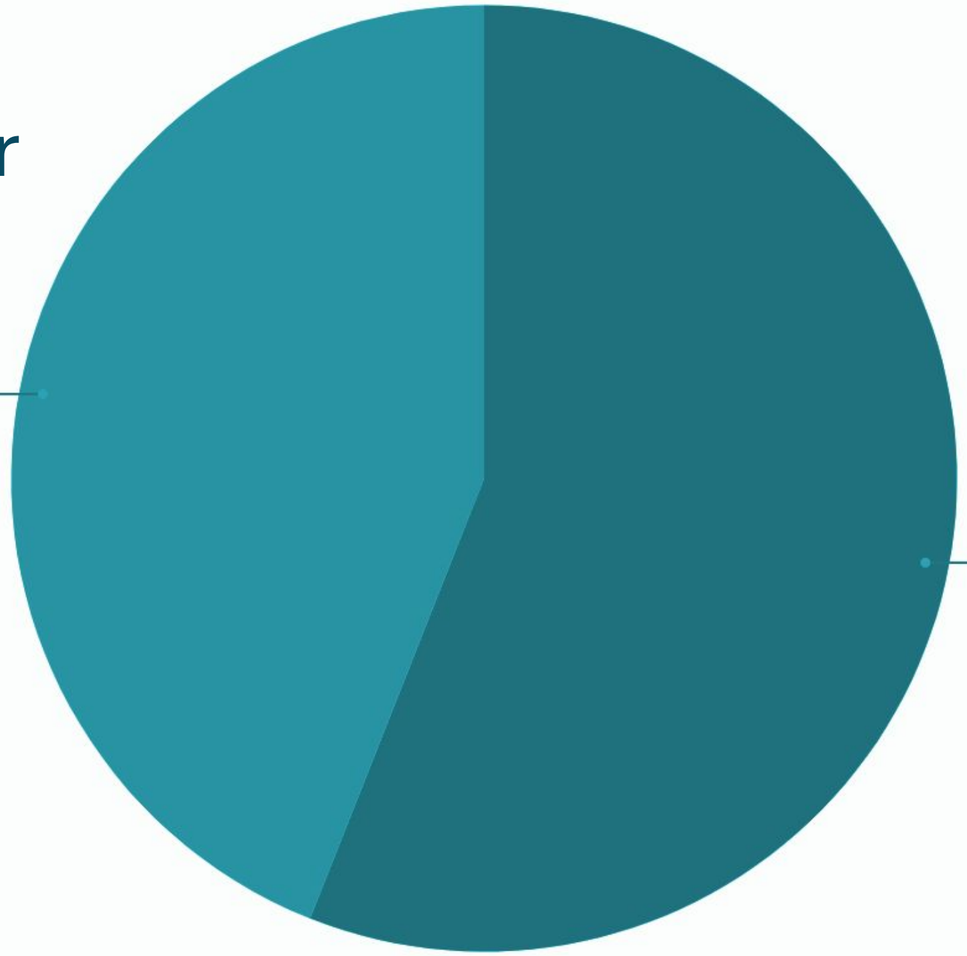
What percentage of the centre's waste do you think is recycled or recovered?

POLL

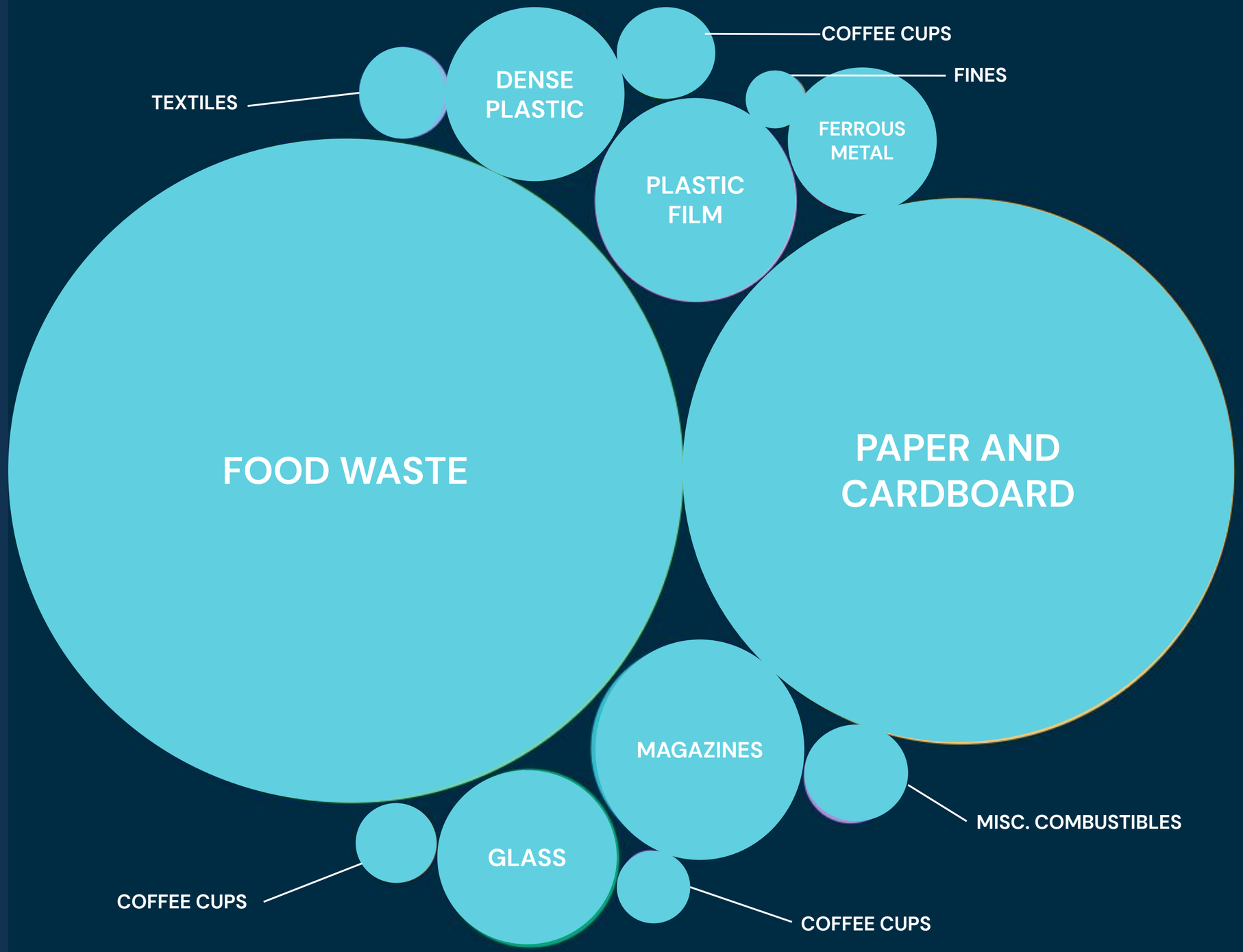
Which material type do you think has the biggest impact on our environment across its lifecycle?

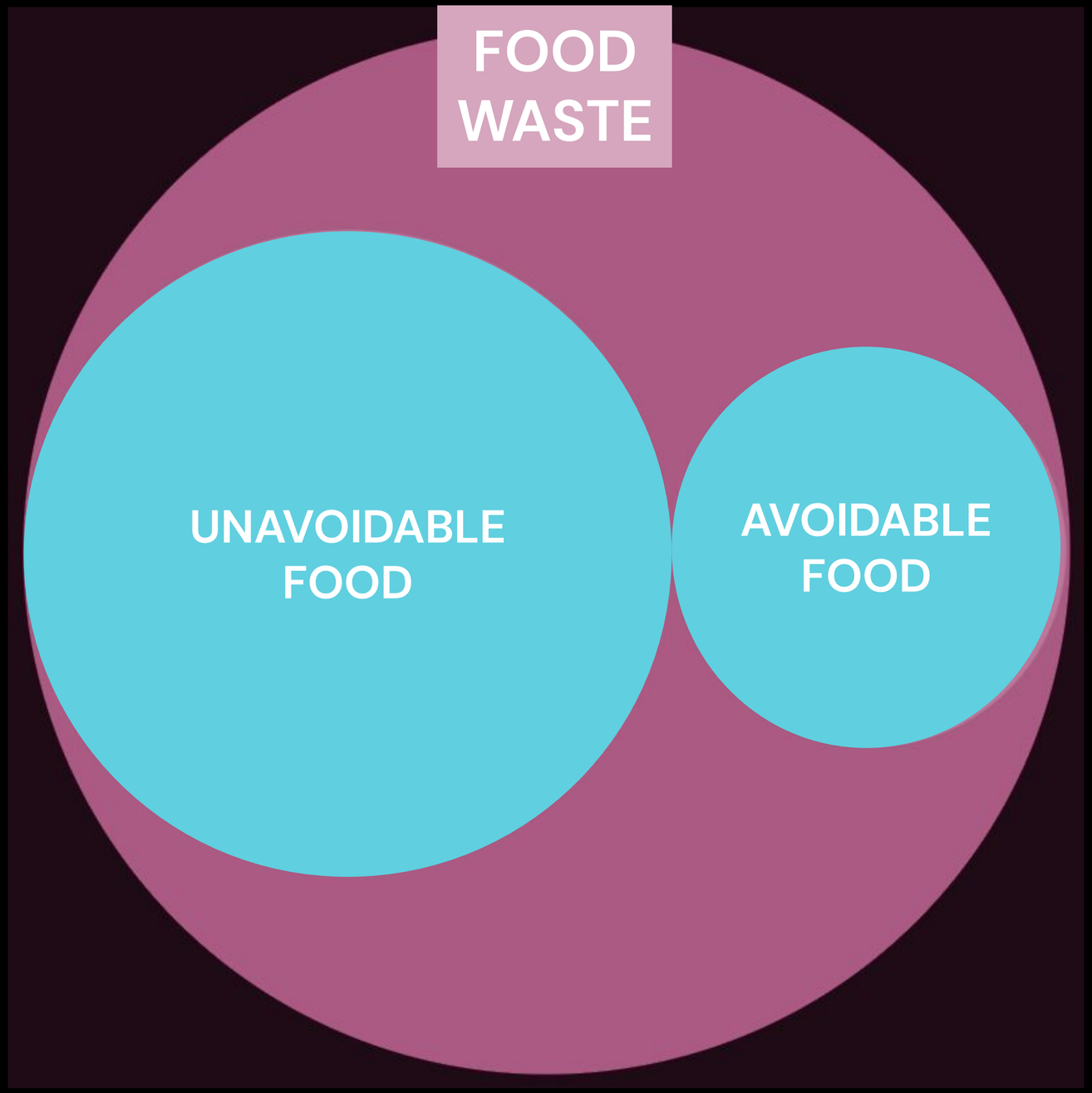

Organic 1025 kg
1746 kg Dock 1
118 kg Public Pl
648 kg Dock 2
Card 1024 kg
Mixed 19 kg
Plastic Film 94 kg
Glass 65 kg
Paper 118 kg
Dense Plastic 71 kg
Coffee Cups 17 kg
General Waste 1414 kg
14 kg Non-Ferrous Metal
31 kg Ferrous Metal
Recycling 1097 kg

Collected for recycling
44%



Collected for landfill
56%


COFFEE CUPS
FINES
TEXTILES
DENSE PLASTIC
FERROUS METAL
PLASTIC FILM
FOOD WASTE
PAPER AND CARDBOARD
MAGAZINES
MISC. COMBUSTIBLES
GLASS
COFFEE CUPS
COFFEE CUPS

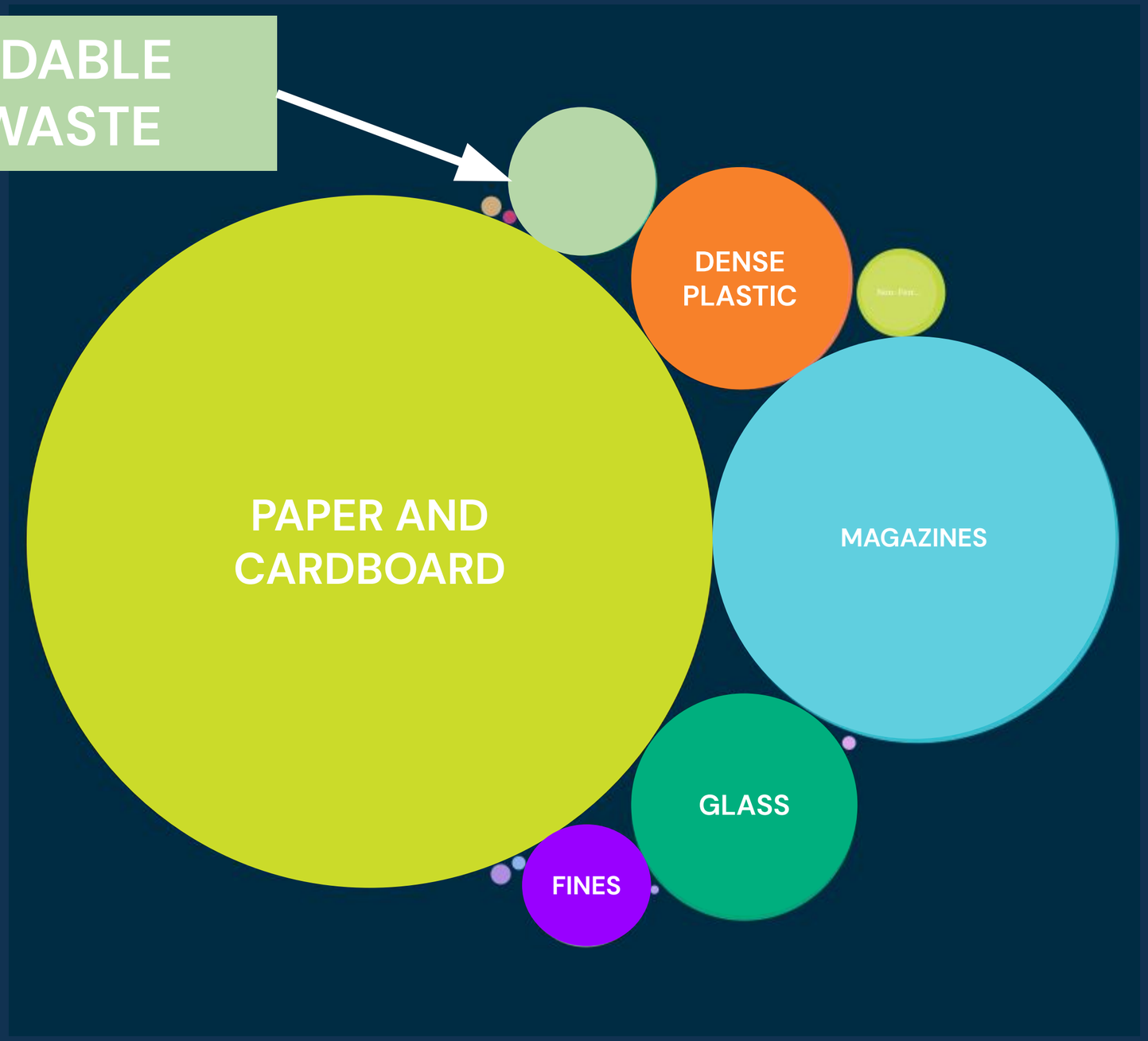


FOOD WASTE

1.024 tonnes

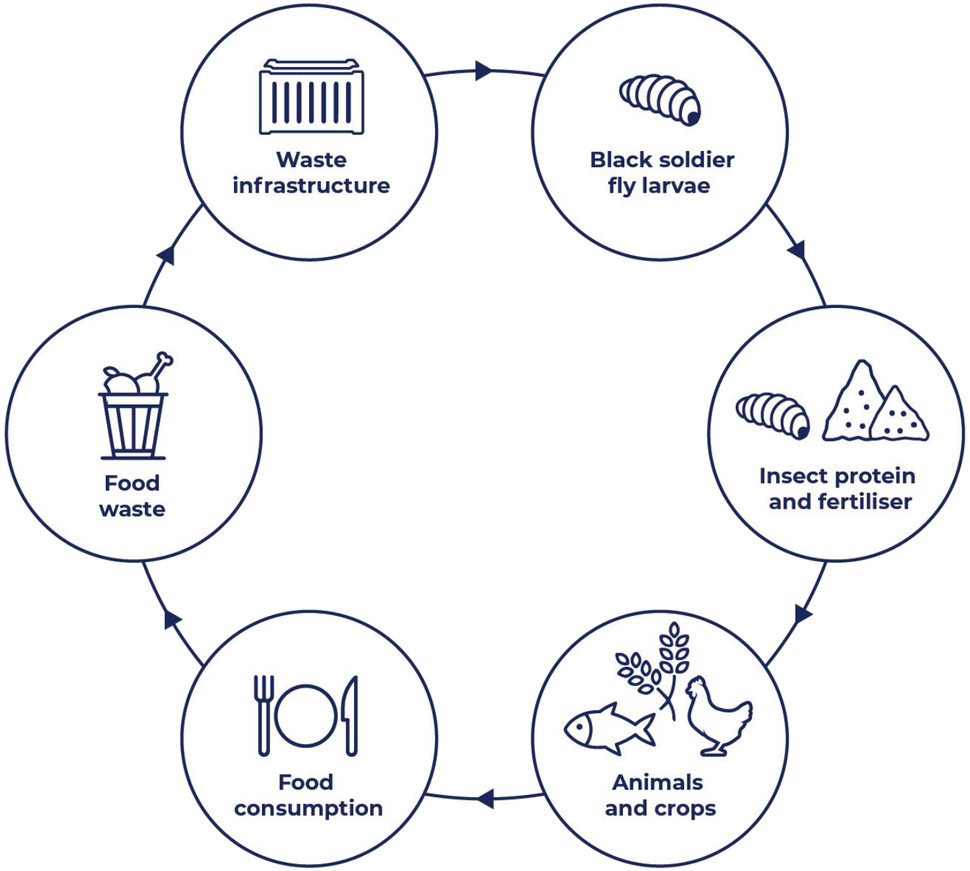
- **Unavoidable Food Waste (746.14kg)**
  - Post consumer (i.e. left on plate) and non-edible food (i.e. scraps)
- **Avoidable Food Waste (278.65 kg)**
  - Food or drink that at some point was edible (incl. contaminated plastics and dairy products)
- **Impact**
  - **Production:** water, land, fertiliser, transportation
  - **End of life:** decomposes to produce methane
  - **Carbon Footprint:**
  - **Recoverability:** Composting - regenerating soil, input for insect farming, waste to energy

UNAVOIDABLE FOOD WASTE



GOTERRA

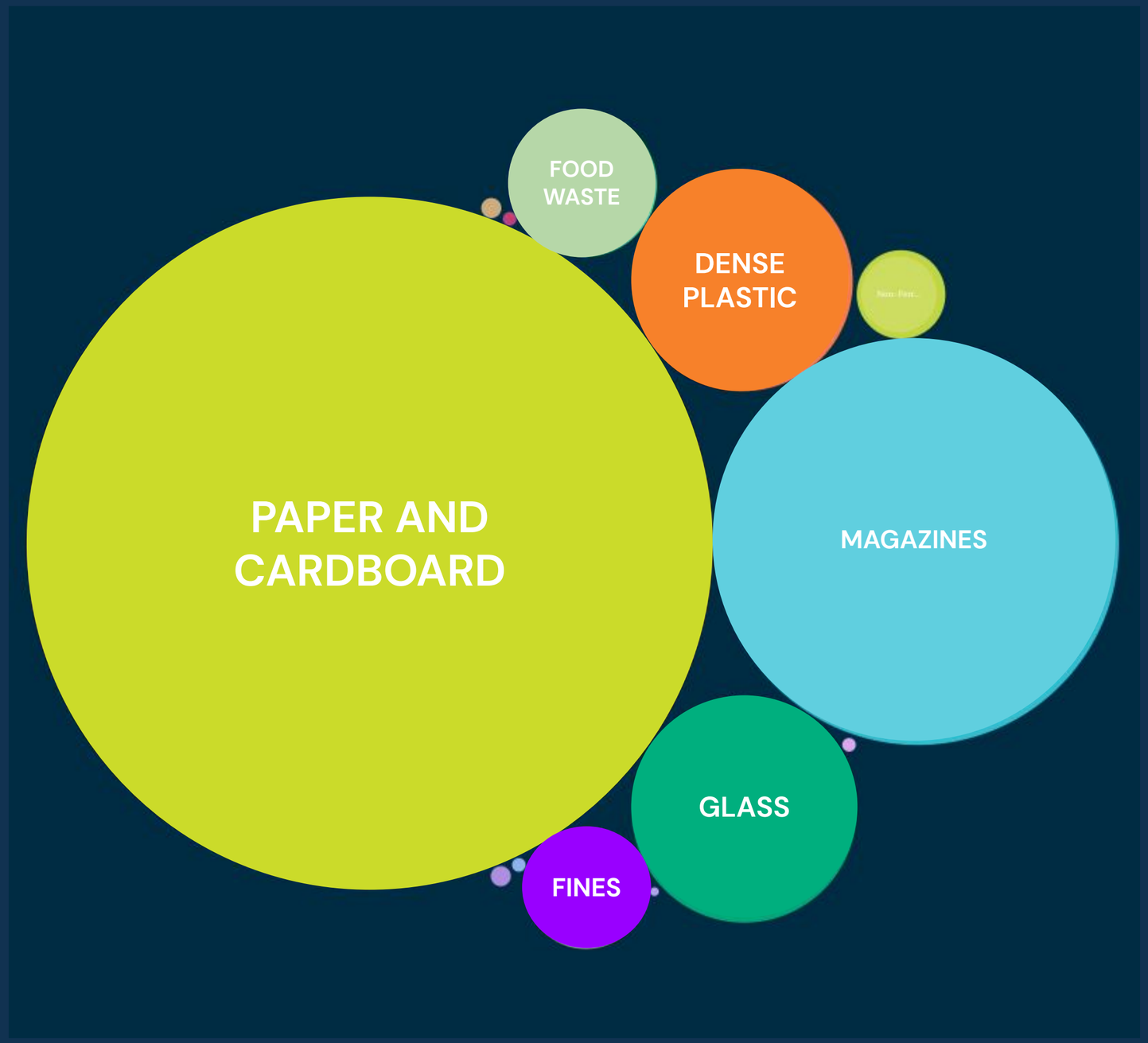
CASE STUDY



WINNOW

CASE STUDY

winnow


FOOD WASTE
DENSE PLASTIC
PAPER AND CARDBOARD
MAGAZINES
GLASS
FINES

PAPER AND CARD

1.142 ton

- **Paper (117.61kg)**
  - Newspaper, magazines, packaging paper, etc.
- **Card (1024.34 kg)**
  - Cardboard Packaging/boxes
- **Impact:**
  - **Production:** deforestation, water, air
  - **Carbon footprint:**
  - **End of life:** When paper rots, it emits methane gas, 25 times more toxic than CO2
  - **Recoverability:** Highly recyclable and established processes

RECYCLING PAPER INTO CONSTRUCTION MATERIALS

CASE STUDY

DENSE PLASTICS

71.2kg

- **PET/HDPE Bottles (31.56 kg):** Water, Milk, Cleaning bottles
- **LDPE, PP, PS Containers (17.96kg):** Styrofoam
- **PET/HDPE Containers (11.64kg):** Disposable clear food packaging
- **Impact:**
  - **Production:** petroleum, natural gas, water, toxic emissions
  - **Carbon footprint:** 6,400 CO2e per tonne
  - **End of life:** leach into the environment, polluting the soil, air and underground water, break-down to microplastics
  - **Recoverability:** Highly recyclable and established processes

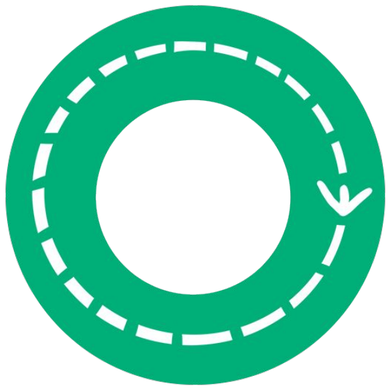
SOFT PLASTICS

93.8 kg

- **Description:** Carrier bags, sacks and liners, packaging film
- **Impact:**
  - **Production:** natural gas, oil, electricity
  - **End of life:** Landfill or pollutant in natural environment (causing toxic leaching)
  - **Carbon Footprint:** 6,400 CO2e per tonne
  - **Recoverability:** Specific recycler

REDCYCLE

CASE STUDY



RED Group is dedicated to recovering and recycling plastic films, bags, and packaging that would otherwise be disposed of in landfills across Australia.

SINGAPORE HAWKER HALLS

CASE STUDY

BREAK

METALS

44.48 kg

- **Ferrous (30.77 kg):** iron or steel rods or drums
- **Non ferrous (13.71 kg):** aluminium cans
- **Impact:**
  - **Production:** extraction, land, air pollution, waste
  - **End of life:** Soil contamination - leaching, highly toxic and impact natural ecosystems
  - **Carbon Footprint:** 26,700 CO2e per tonne
  - **Recoverability:** Highly valuable and infinite recyclable

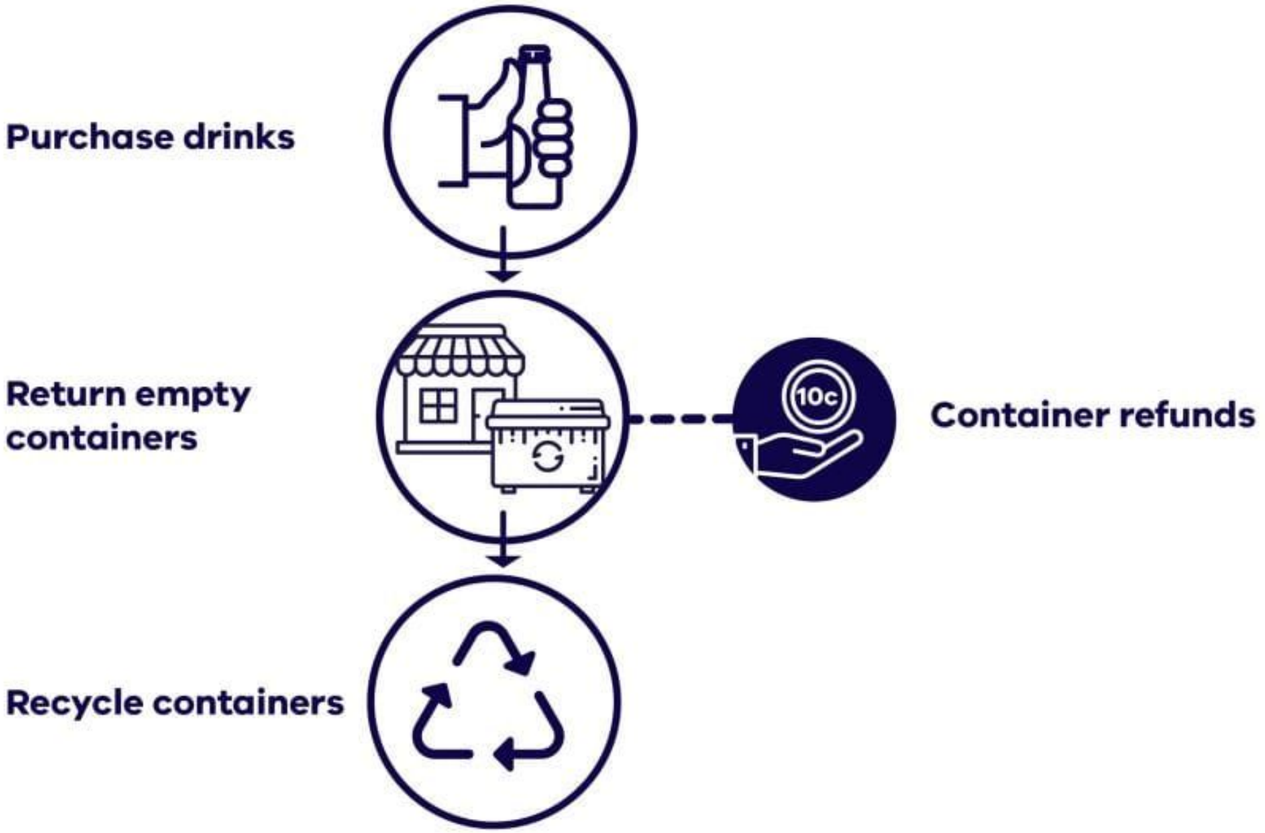
GLASS

65.43 kg

- **Description:** clear bottles, coloured bottles, pyrex, windscreens
- **Impact:**
  - **Production:** emissions, energy intensive
  - **End of life:** air and water pollution
  - **Carbon Footprint:** 2,000 CO2e per tonne
  - **Recoverability:** fully recyclable

CONTAINER DEPOSIT SCHEME

CASE STUDY



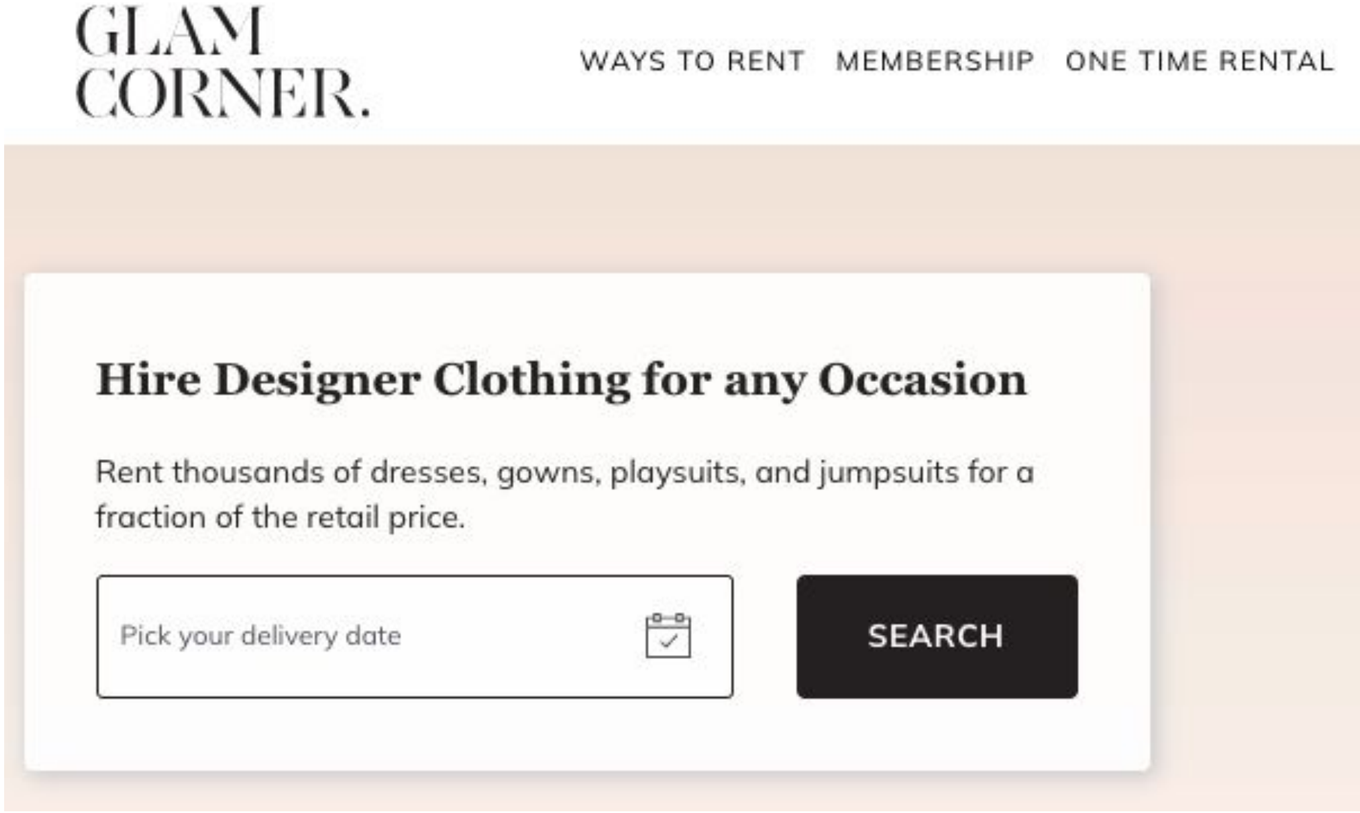
TEXTILE

14 kg

- **Description:** Non-clothing textiles (i.e. dish cloths)
- **0% recycled**
- **Impact:**
  - **Production:** water, emissions, oil-based plastics used to create textiles
  - **End of life:** land and ocean pollution, toxic microfibers pollution
  - **Carbon Footprint:** 12,800 CO2e per tonne
  - **Recoverability:** Challenging and limited options for post-industrial non-clothing textile waste

GLAMCORNER

CASE STUDY



COMBUSTIBLE/HAZARDOUS

30 kg

- **Description:** household chemicals, E-Waste, ceramic, styrofoam, treated timber
- **Impact:**
  - **Production:** water, emissions, oil-based plastics used to create textiles
  - **Carbon footprint:** Broad category, depends on product
  - **End of life:** Highly toxic and potential fire hazard
  - **Recoverability:** Specialty recyclers and disposal required

PONYUP FOR GOOD

CASE STUDY

DEVICE DONATION

Organisations PonyUp decommissioned technology

DATA CLEANSE

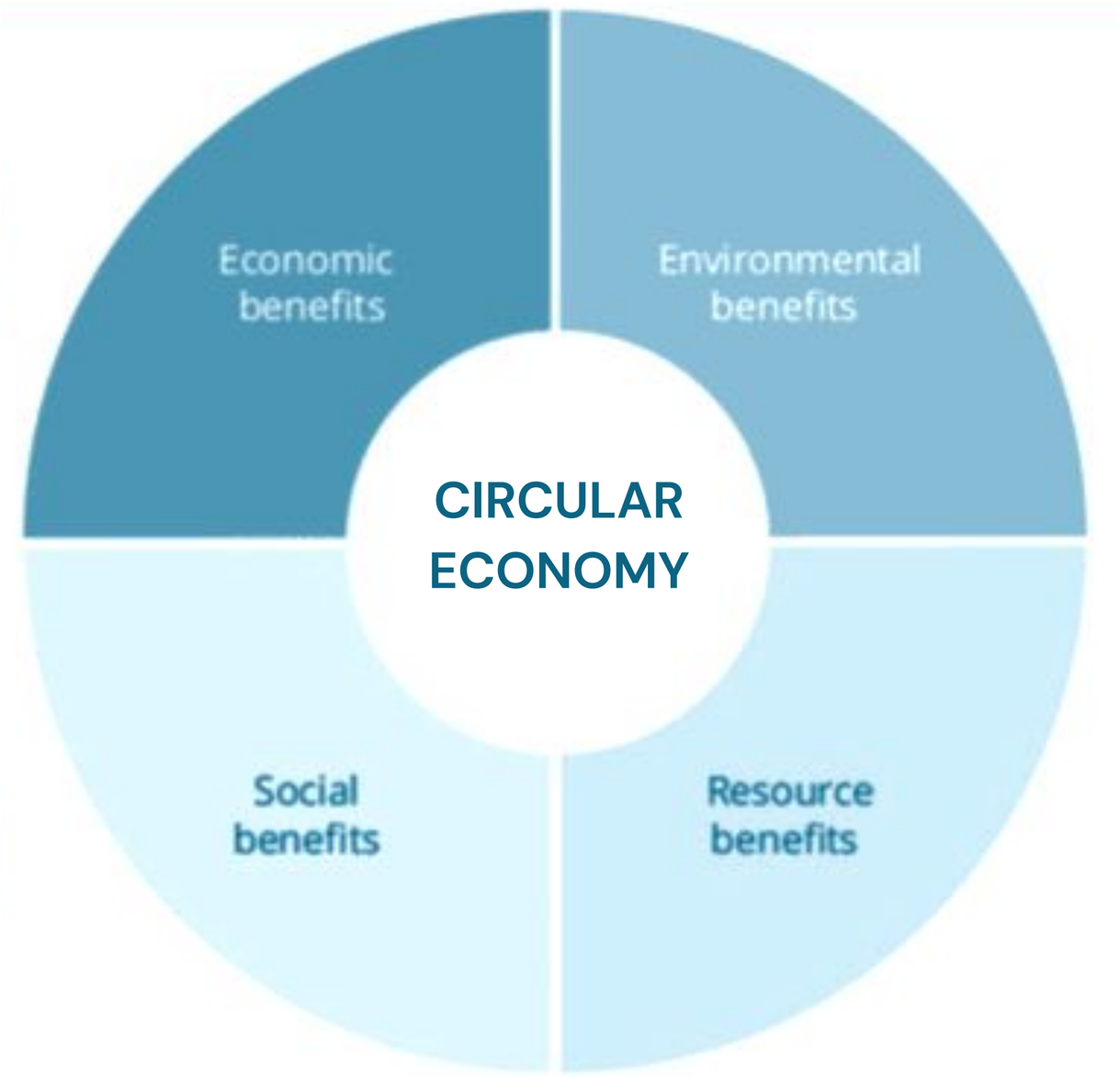
Data is erased from devices using Federal Government certified data security processes

DEVICES REUSED

Cleansed devices are sold for reuse, effectively reducing toxic e-waste landfill

50% OF PROFIT TO FOOD RESCUE

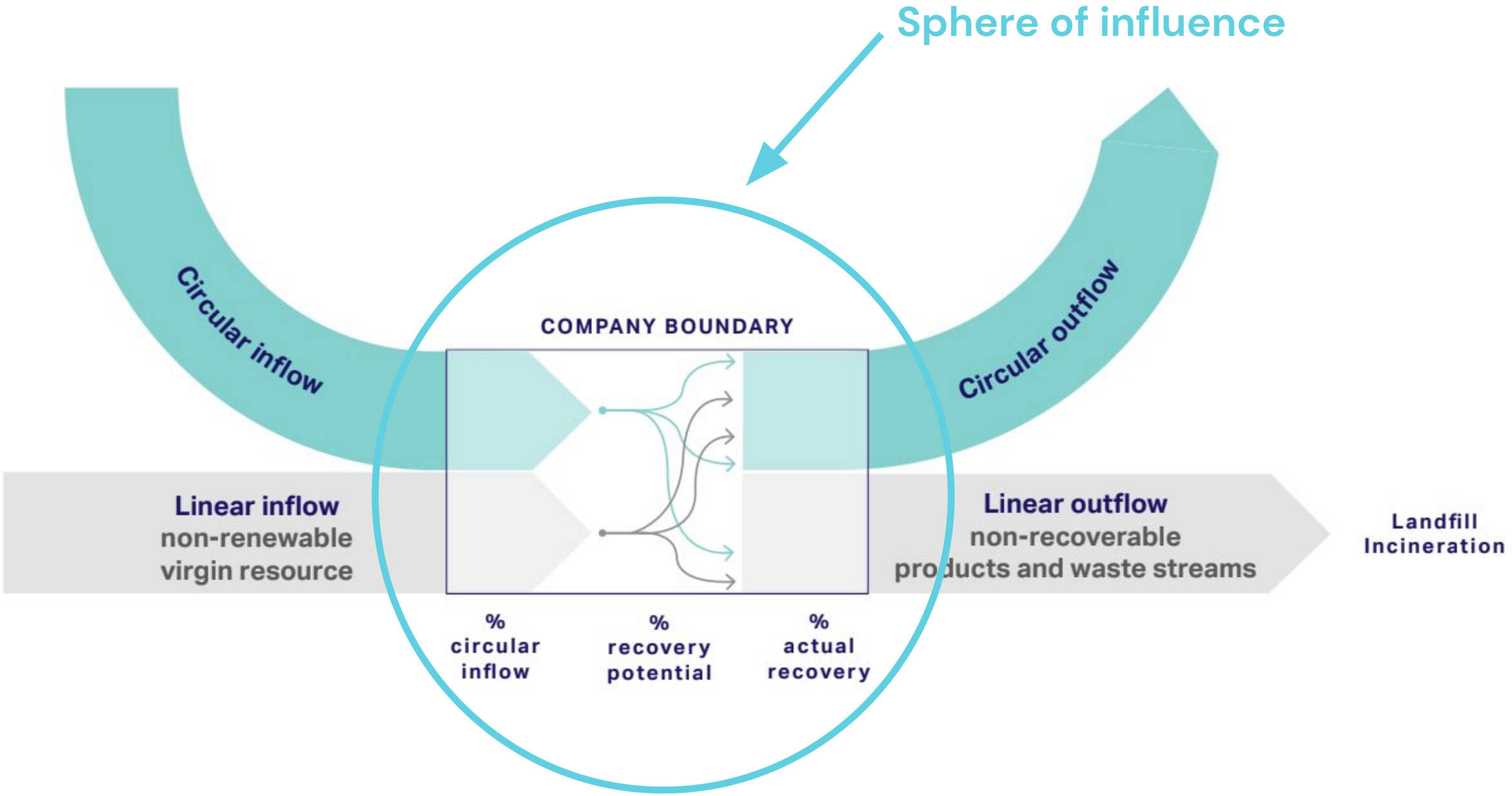
50% of all profits are donated to SecondBite who redistribute surplus food to vulnerable Australians


Economic benefits
Environmental benefits
CIRCULAR ECONOMY
Social benefits
Resource benefits

PUT EFFORT WHERE IT MAKES THE MOST DIFFERENCE

Paper cup = 100 g CO_2

Aluminium can = 1,400 g CO_2


Sphere of influence
Circular inflow
Circular outflow
COMPANY BOUNDARY
Linear inflow
non-renewable
virgin resource
Linear outflow
non-recoverable
products and waste streams
Landfill
Incineration
% circular inflow
% recovery potential
% actual recovery

THREE PRINCIPLES OF A

CIRCULAR ECONOMY

1 **DESIGN OUT WASTE**
AND POLLUTION

2 **KEEP PRODUCTS & MATERIALS IN USE**
AT THEIR HIGHEST VALUE FOR AS LONG AS POSSIBLE

3 **REGENERATE NATURAL SYSTEMS**

POLL

Which waste stream should we redesign at the QV centre for the greatest environmental benefits?

POLL

Which waste stream would be most valuable to you if it were redesigned?

POLL

Overall, which two waste streams do you think should go on to the next phase of this project?

NEXT STEPS

- CIRCULAR ECONOMY MATURITY ASSESSMENT

- WORKSHOP 2

- ACTION BABY ACTION- ROADMAP FOR REDESIGNING A WASTE STREAM AT QV

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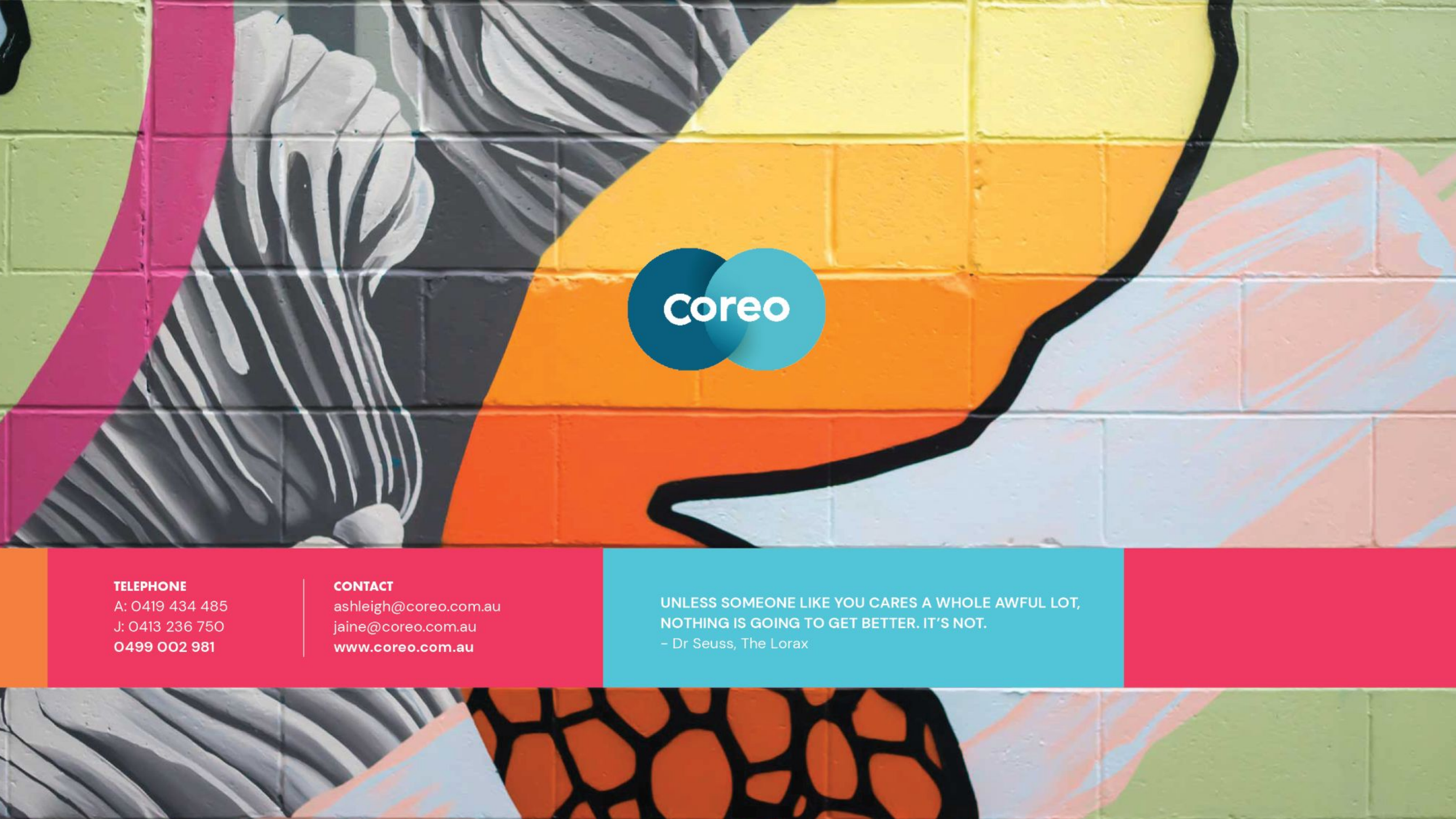

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UNLESS SOMEONE LIKE YOU CARES A WHOLE AWFUL LOT, NOTHING IS GOING TO GET BETTER. IT'S NOT.
– Dr Seuss, The Lorax