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GRUPO MARISTA



BUSINESS **TOURNAMENT**

PUCPR + WOXSEN





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Organizations need to work to
develop their communities.





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The perspective once known as the 'Triple Bottom Line', is today consecrated as the ESG principles, which go beyond shareholder value tenets



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Environmental concerns tackles the current climate crisis worldwide, and threats to environmental long-term sustainability.





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Social concerns address the human rights crisis, including lack of basic sanitation, opportunity distribution, diversity, and wealth



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Governance concerns address management structures, fair compensation, and organizational performance as linked with broader metrics.





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On this Business Tournament, you will be guided to work on developing financially sustainable communities and organizations, abiding by ESG principles.



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PROPONENTS

PUCPR + Woxsen





BRAZIL CHALLENGE



HIGH-VALUE RECYCLING & UPCYCLING

You will develop a step-by-step guide to high-value recycling or upcycling to a Brazilian Scavengers Cooperative



COOPERATIVE STRUCTURING

You will develop a management and bureaucratic structuration plan for a Brazilian Scavengers Cooperative



INDIA CHALLENGE



HIGH-VALUE RECYCLING & UPCYCLING

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GROUP COMPOSITION

All teams must be composed by Brazilian and Indian students.
All teams must hold Weekly meeting and advising sessions with their assigned advisors
Working through different time-zones is part of the challenge



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FINAL DELIVERY

Your final delivery will be a step-by-step plan of how to implement your solution. You will have to present the final delivery to an assessment committee evaluating your work according to the following rubric.





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DELIVERY RUBRIC

- Viability: Is the solution viable?
- Feasibility: Is the solution possible?
- Desirability: Does the community need it?
- Innovation: Is it novel?
- Research: Is it backed by research?
- Impact: Is it life-changing?
- Simplicity: Will the community be able to do?



Thank you!

Questions:

PUCPR:

Prof. Juliana: juliana.noschang@pucpr.br

Prof. Karlan: karlan.muniz@pucpr.br

Prof. Caio: augusto.caio@pucpr.br

Woxsen:

Prof. Guria: sanjay.guria@woxsen.edu.in

Prof. Kocherlakota:

santosh.kocherlakota@woxsen.edu.in



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Business Tournament

Henrique Ling
Valentina Vitola
Ian Rocha
Leonardo
Raul Cavalli
Ryan Bellie
Shreya AM
Akhil Sakala



1 Type

E-Waste
Plastics
Wood
Metal Scraps
Wet waste
Rubber
Medical

2 Source

Vegetable shop
Flower shop
Cloth store
Meat shop
Medical store
Food stalls
Convenience-store

3 Scope

Plastics
Food waste
Vegetables & fruit peels
Tea leaves
PET bottles
Oil Tins & packets
Tetra Pack
Cardboard box
Paper cups
Coal/Ash
Milk Bag
Plastic bags

Dumpyard



Scrapyard



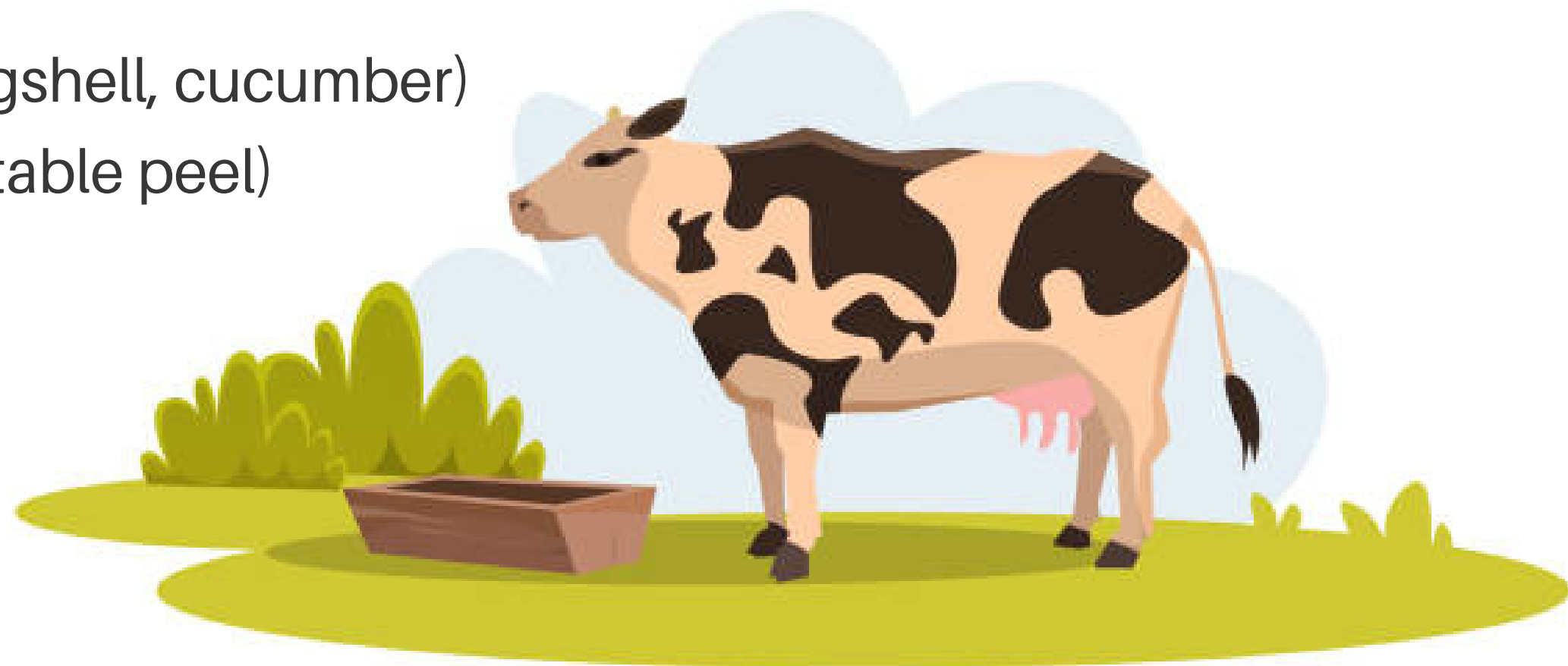


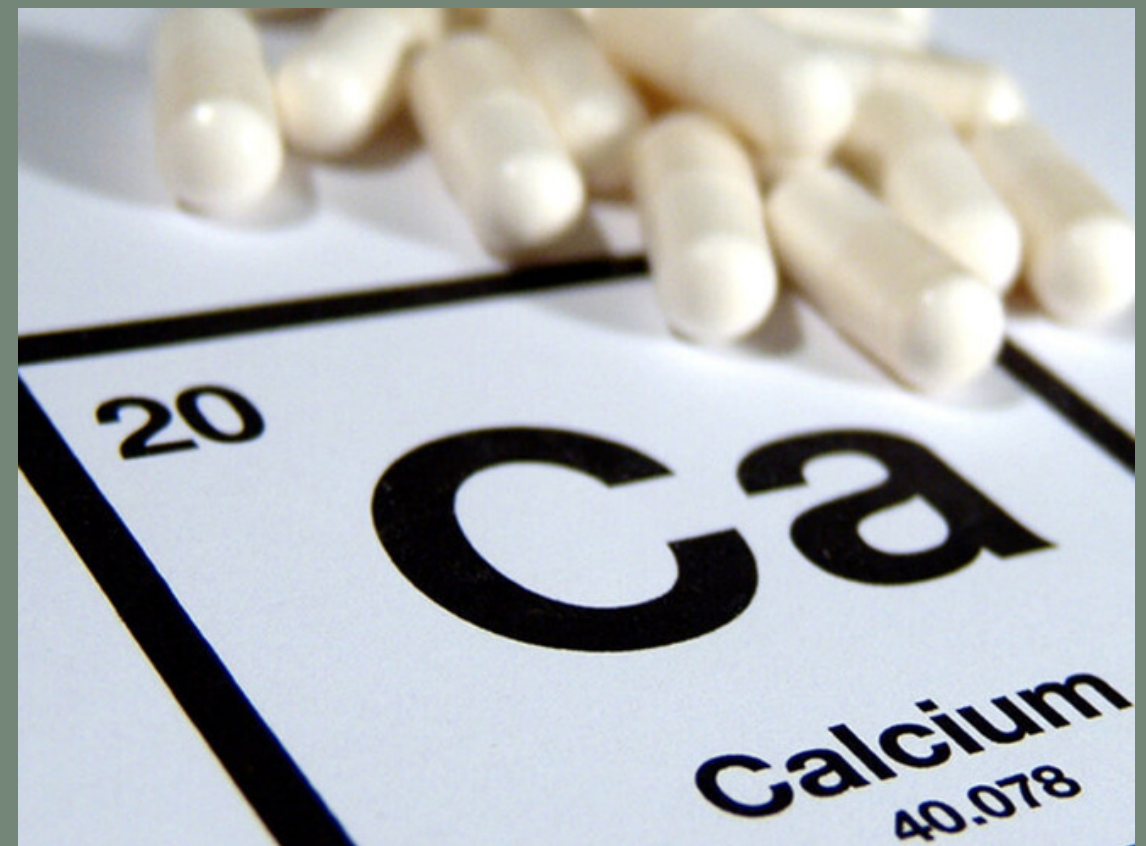
Vegetable Peels



Concepts

- Bone graft substitute
- Denture base
- Cucumber peels into eco-friendly food packaging
- Carrot fiber into fishing rod
- **Vegetable peels for cattle farm**
- Household cleaners (potato, lemon, eggshell, cucumber)
- Manufacture Chalk (Eggshell and vegetable peel)
- Manufacture Calcium Tablet (Eggshell)





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agrosupp





Wet vegetable
peels



Dry vegetable
peels





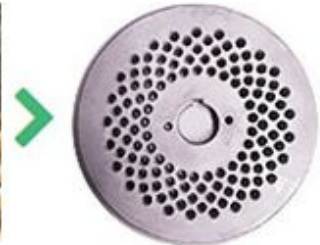
D-type Feed Machine



R-type Feed Machine



Grasses, Beans
Vegetables, etc.



Pellets Diameter: 8mm



Corn Stalk Pellets



Make Feed for Large Animals



Target Audience

- Goshala
- Cattle farm



Publicity

- Google Adv.
- WhatsApp
- Instagram
- Facebook
- YouTube Adv.

က agrosupp

SUPER
mix



**Change your
relationship
with trash.**

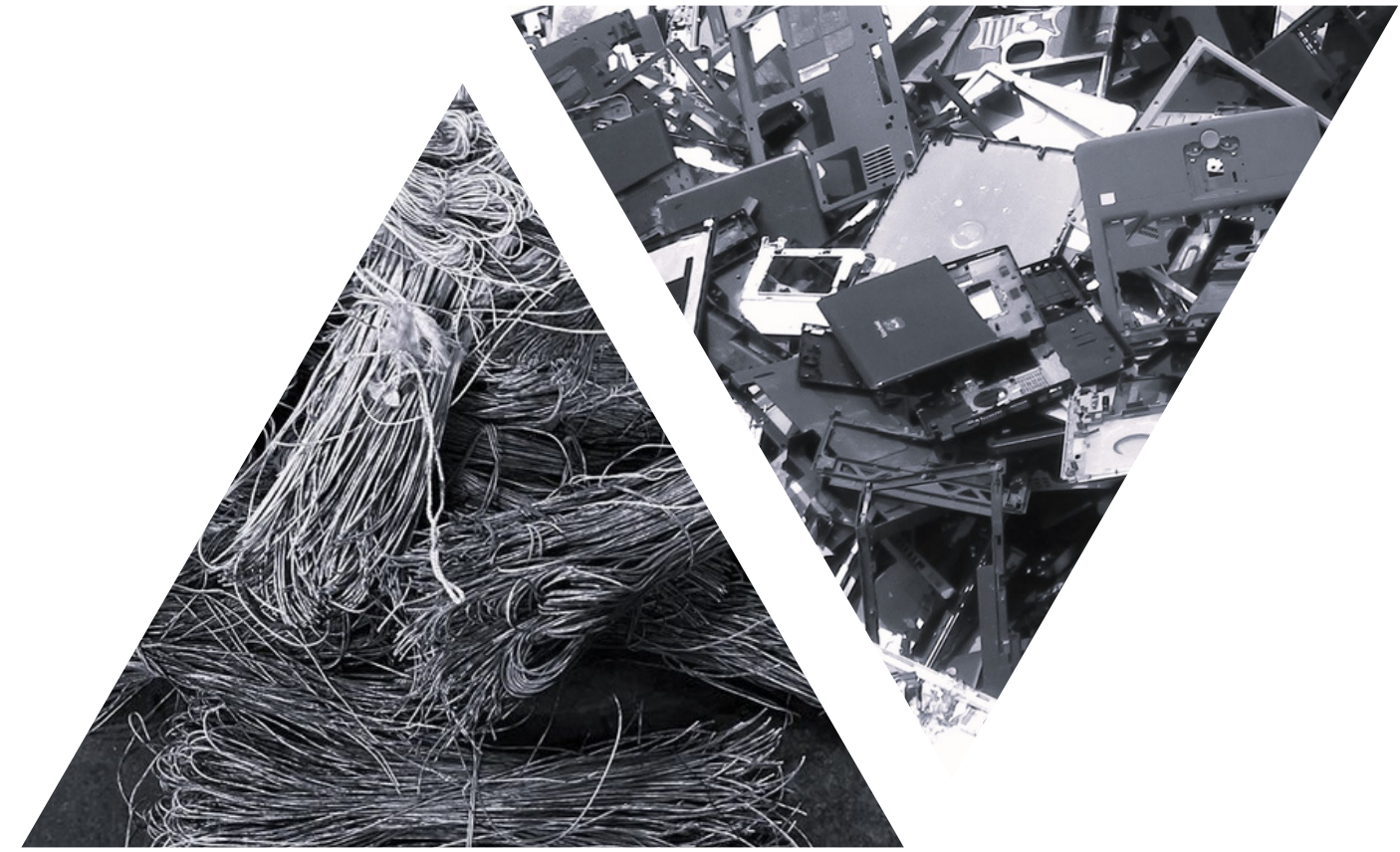
Thank you

E W a s t e

Business-Design Tournament

Asit Gajbhiye
Pruthvi Som
Smriti Sunkara

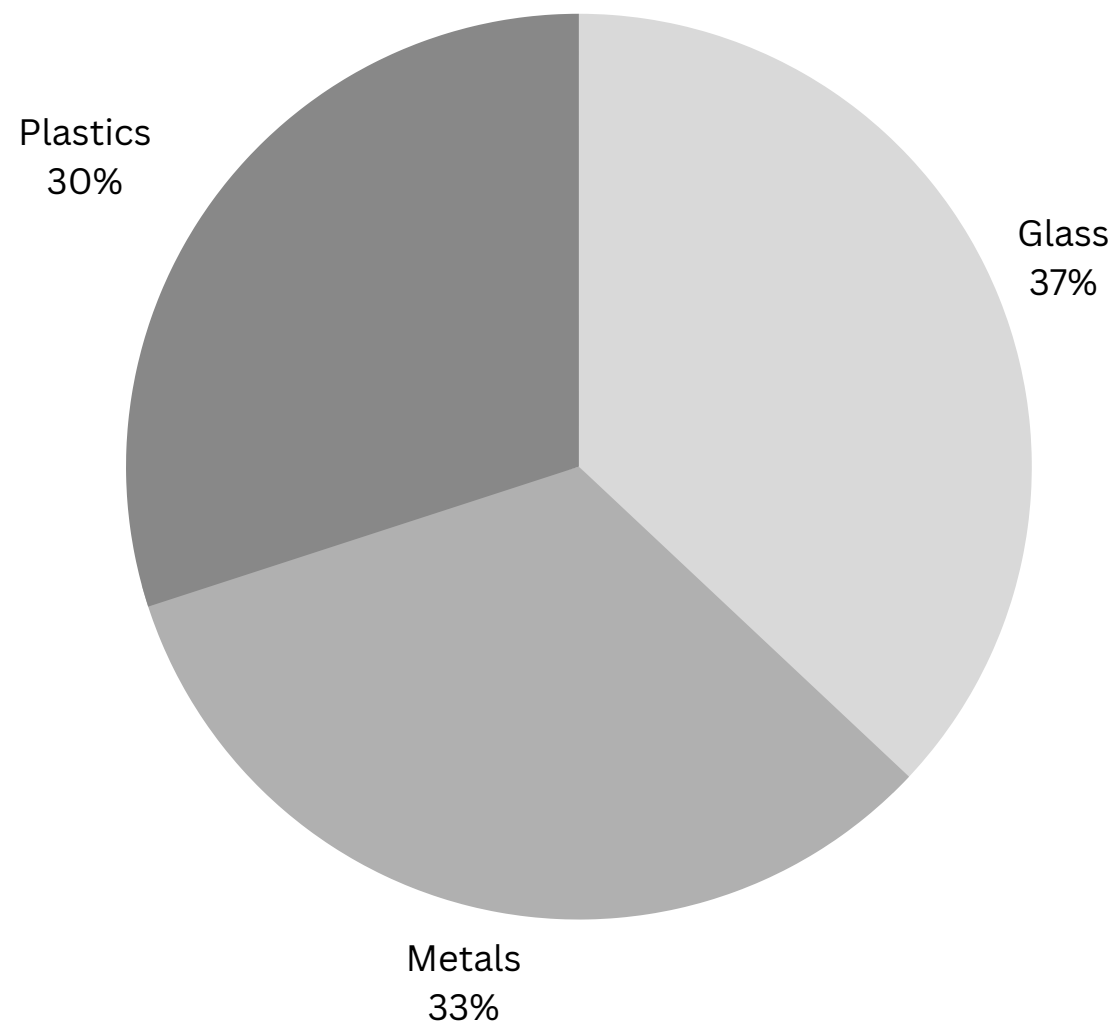
Alexandre Perin
Iasmin Ibrahim
Giovanna Cortes
Amanda Szabo
Laura Bertotto



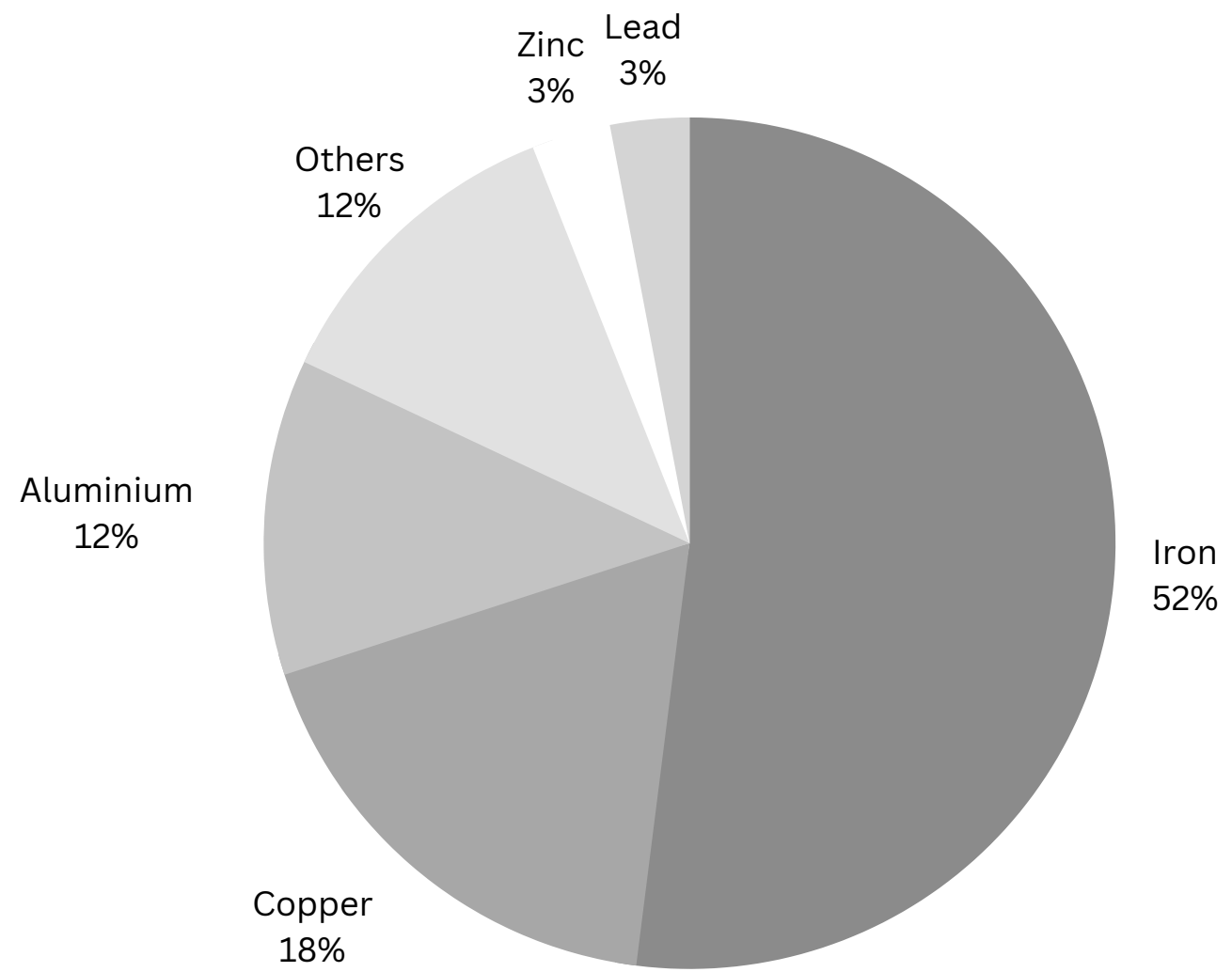
E Waste recycling

Recycling E waste is a complicated process with many steps involved, and requires a lot of technology for efficient recycling.



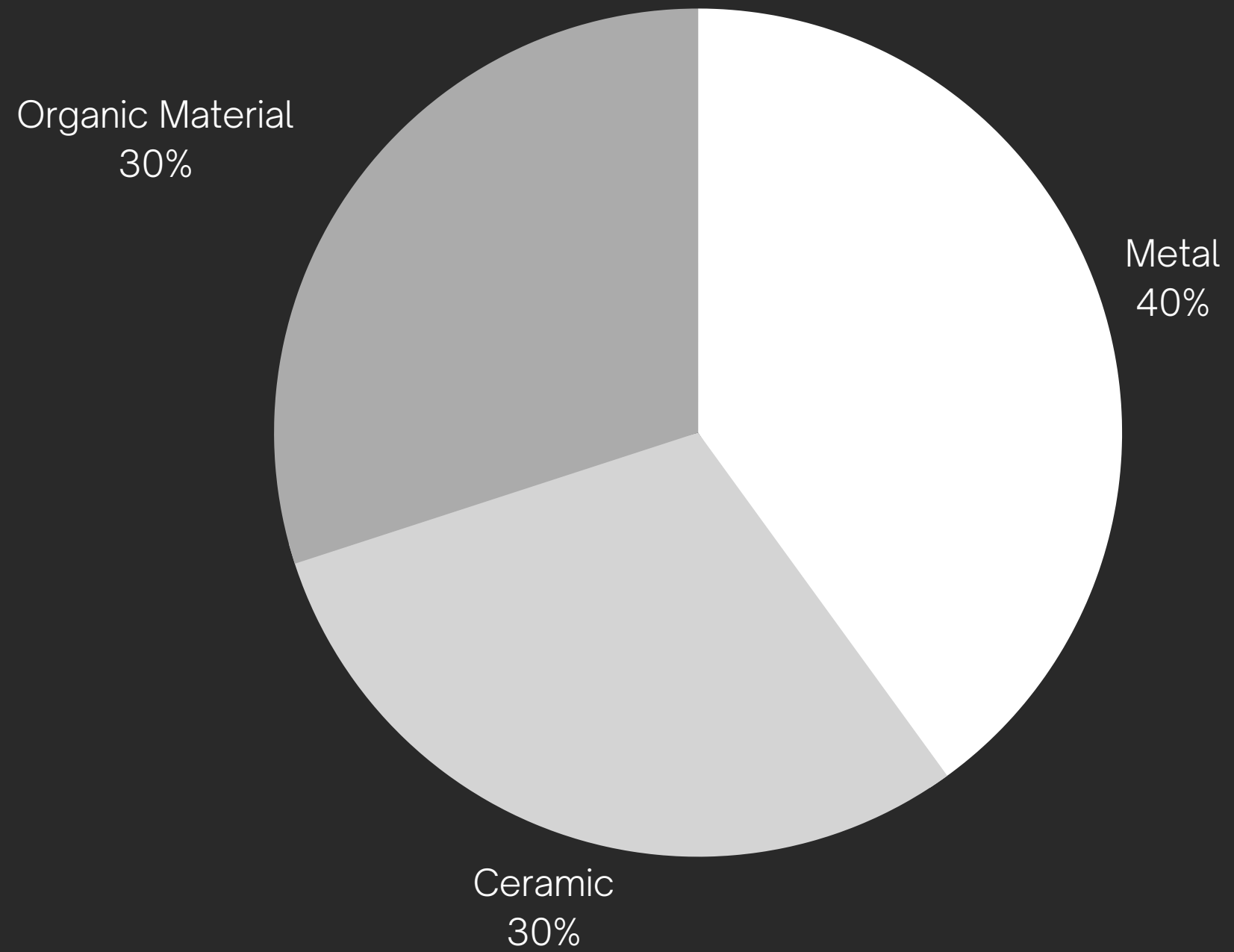


Components of E waste



Metallic constituents of E waste

Constituent materials of PCB

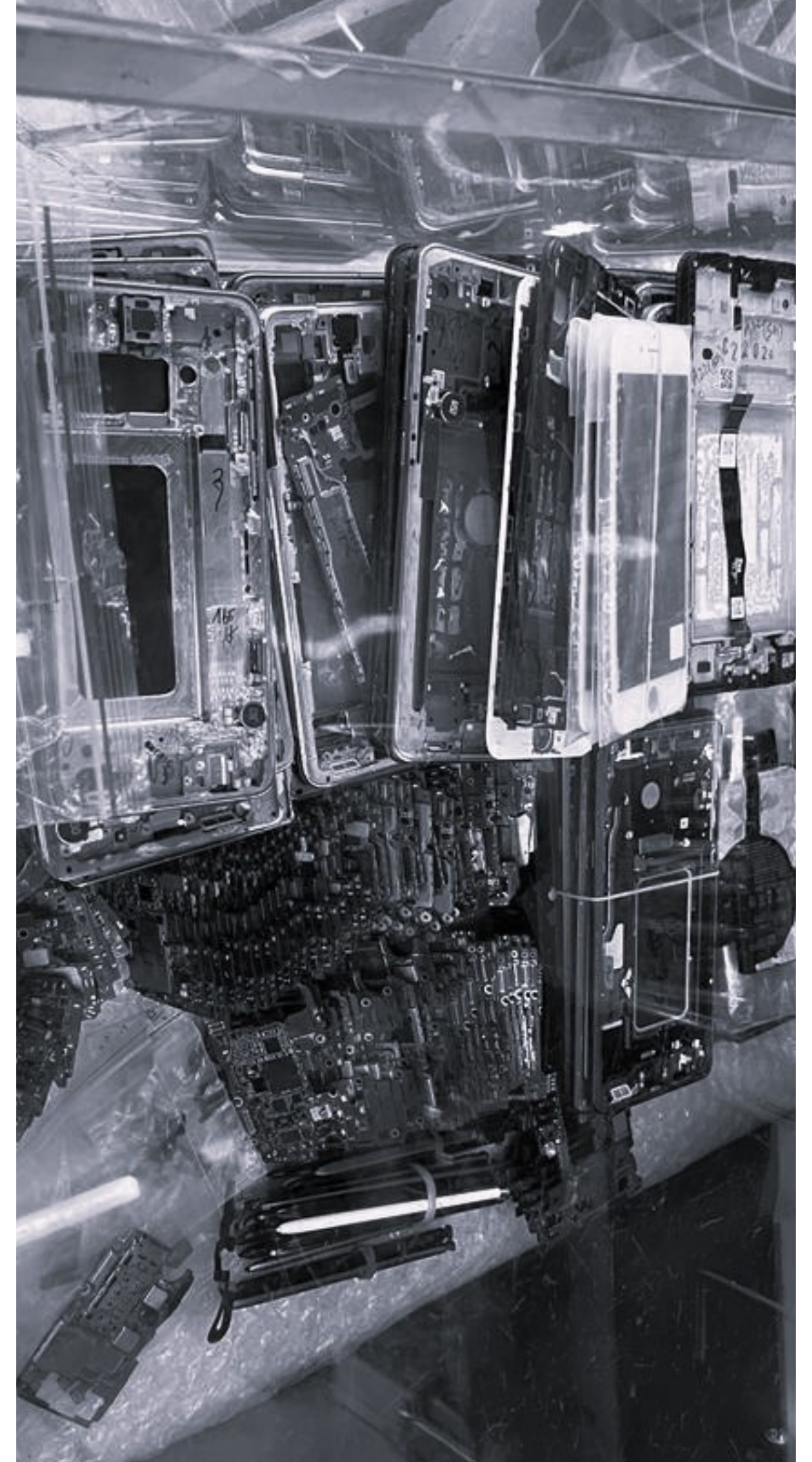


Metals that can be recovered

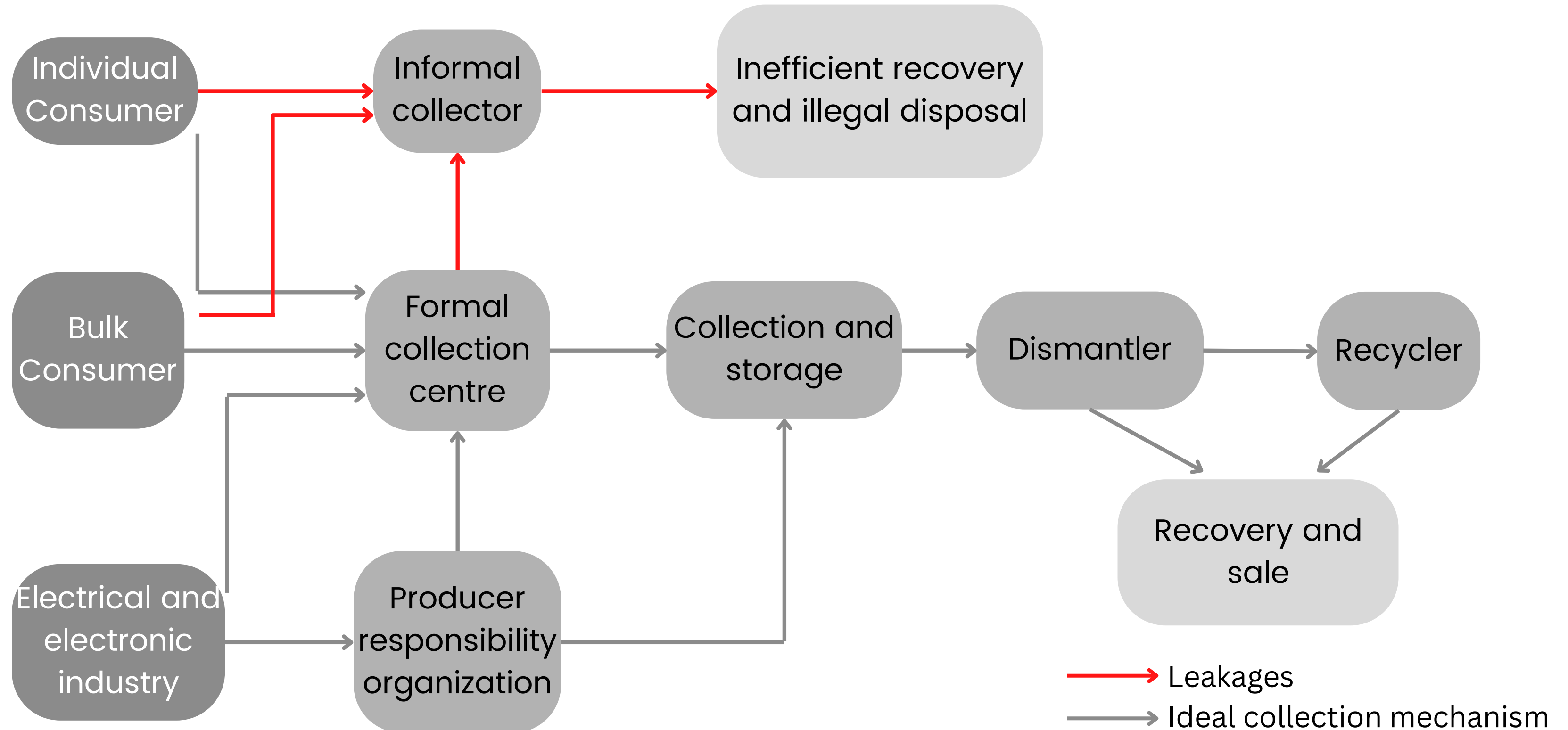
- Copper
- Gold
- Silver
- Platinum
- Tin
- Aluminium

E Waste in India

With rapid development and digitization of the country, E waste generation has skyrocketed in recent years.

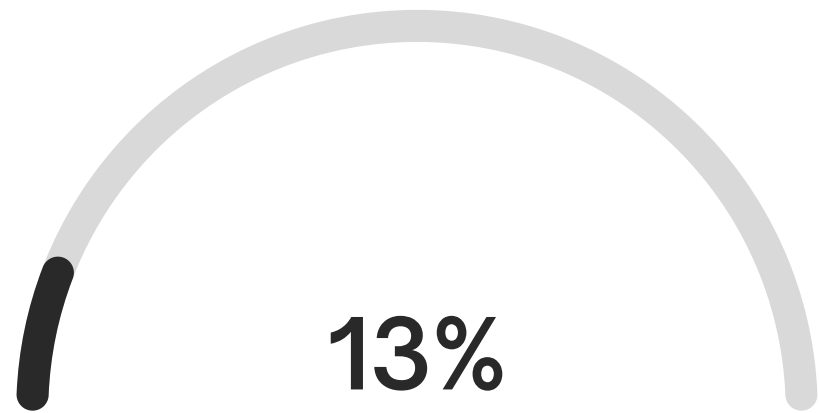


Ideal flow of E waste in India

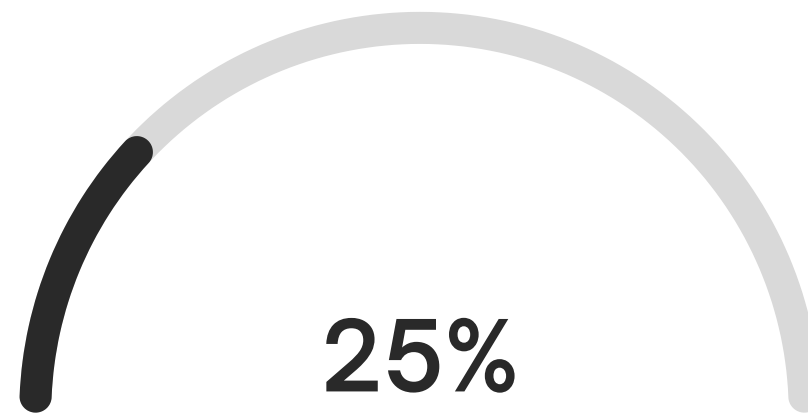


State of E waste

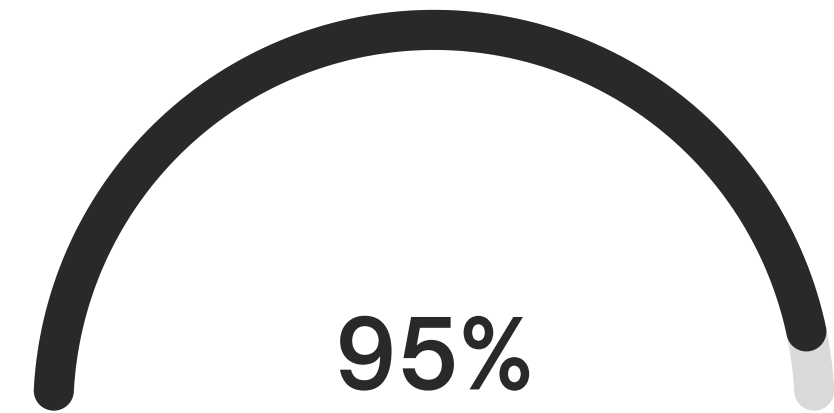
Yearly growth in E waste generation



Max recycling capacity of authorized facilities



E waste recycled by informal sector

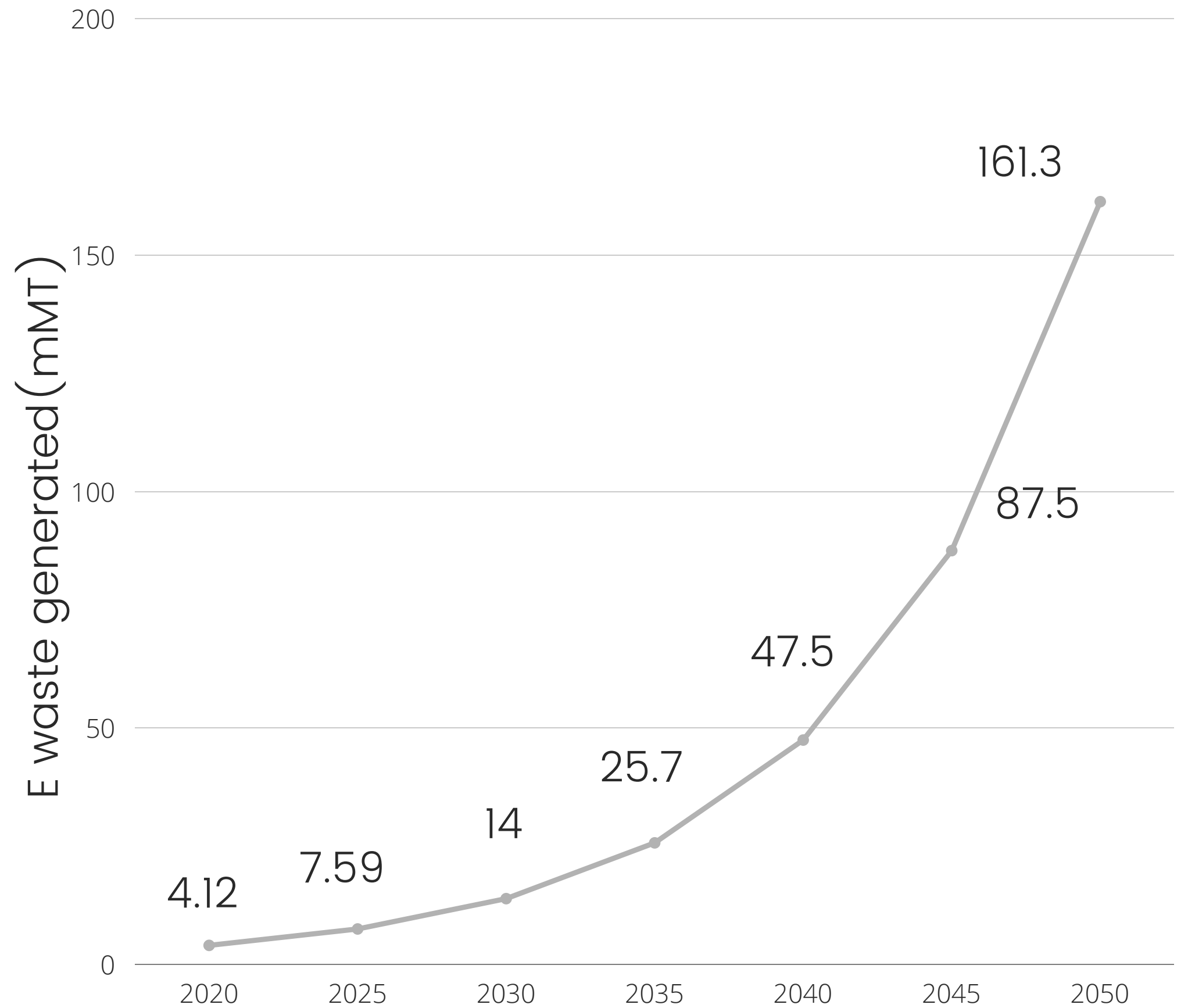


Due to lack of enforcement of rules, limited consumer awareness, and poor infrastructure, majority of E waste is recycled by informal sector in hazardous conditions.

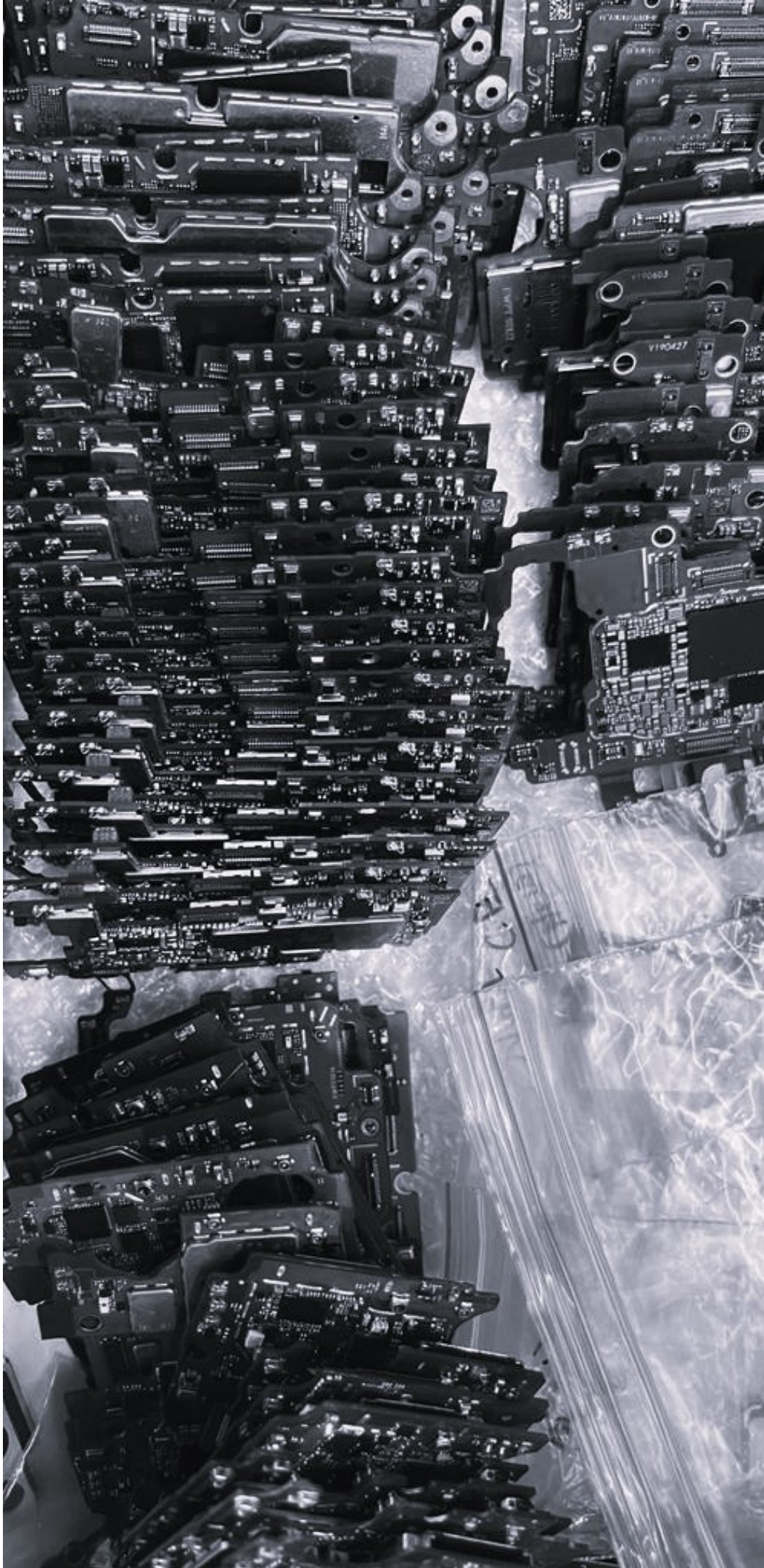
3.2 Million

Metric tons of E waste
generated in 2019

At this **explosive** rate of growth, and lack of infrastructure to safely recycle E waste, you have the choice to **reduce** or **reuse** electronic products.



Promoting reuse of E-waste



Rapidly growing refurbished industry

Refurbishing and repairing smartphones prolongs the useful lifespan.

Raising awareness among the middlemen

Middlemen are often kept in the dark about the value of PCBs and are traded unfairly.

Promoting repair of smartphones

By providing expensive factory parts for cheaper.

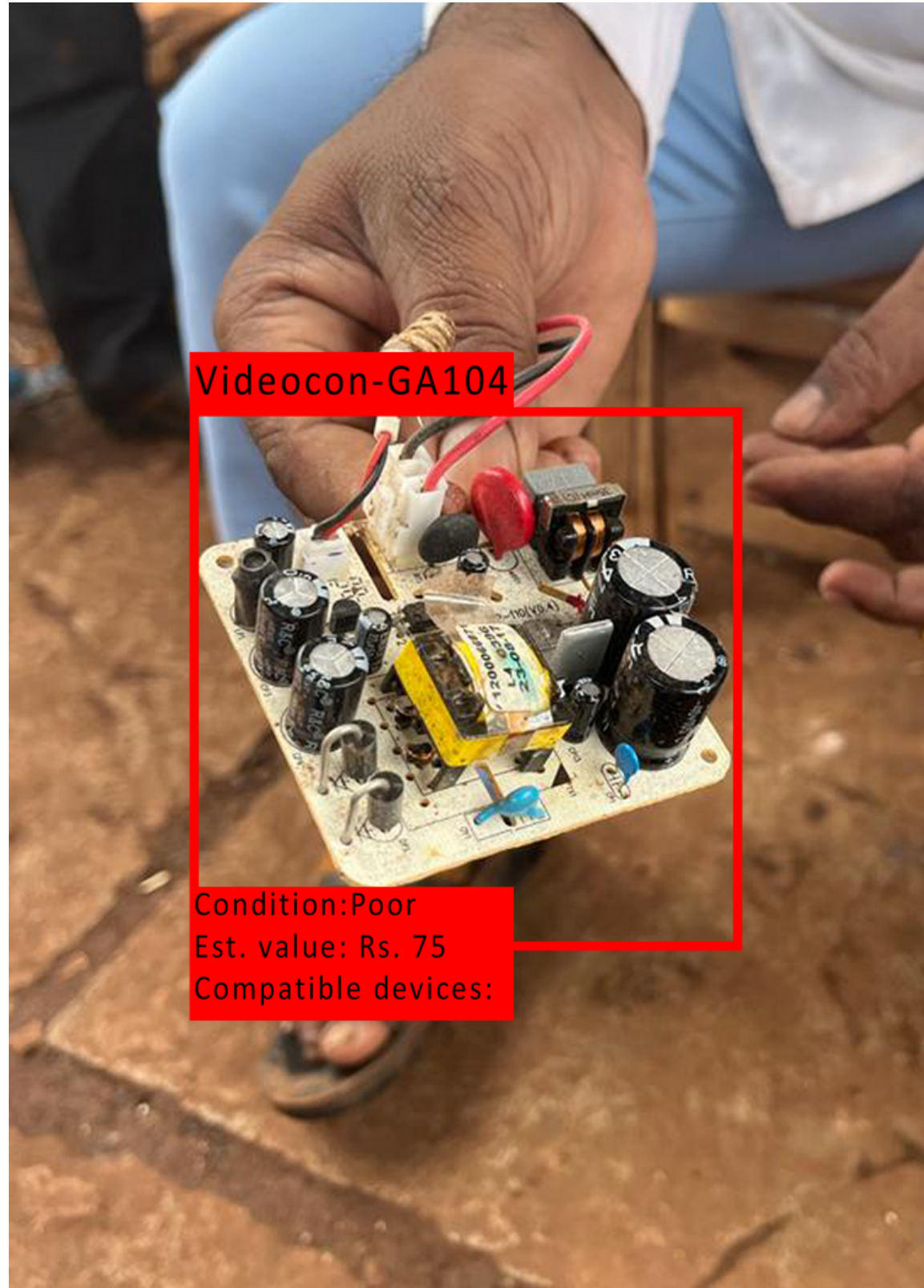
Ai Software to assess printed circuit boards

Feature 1

Identify different components of a circuit board and gives list of compatible devices where it can be reused.

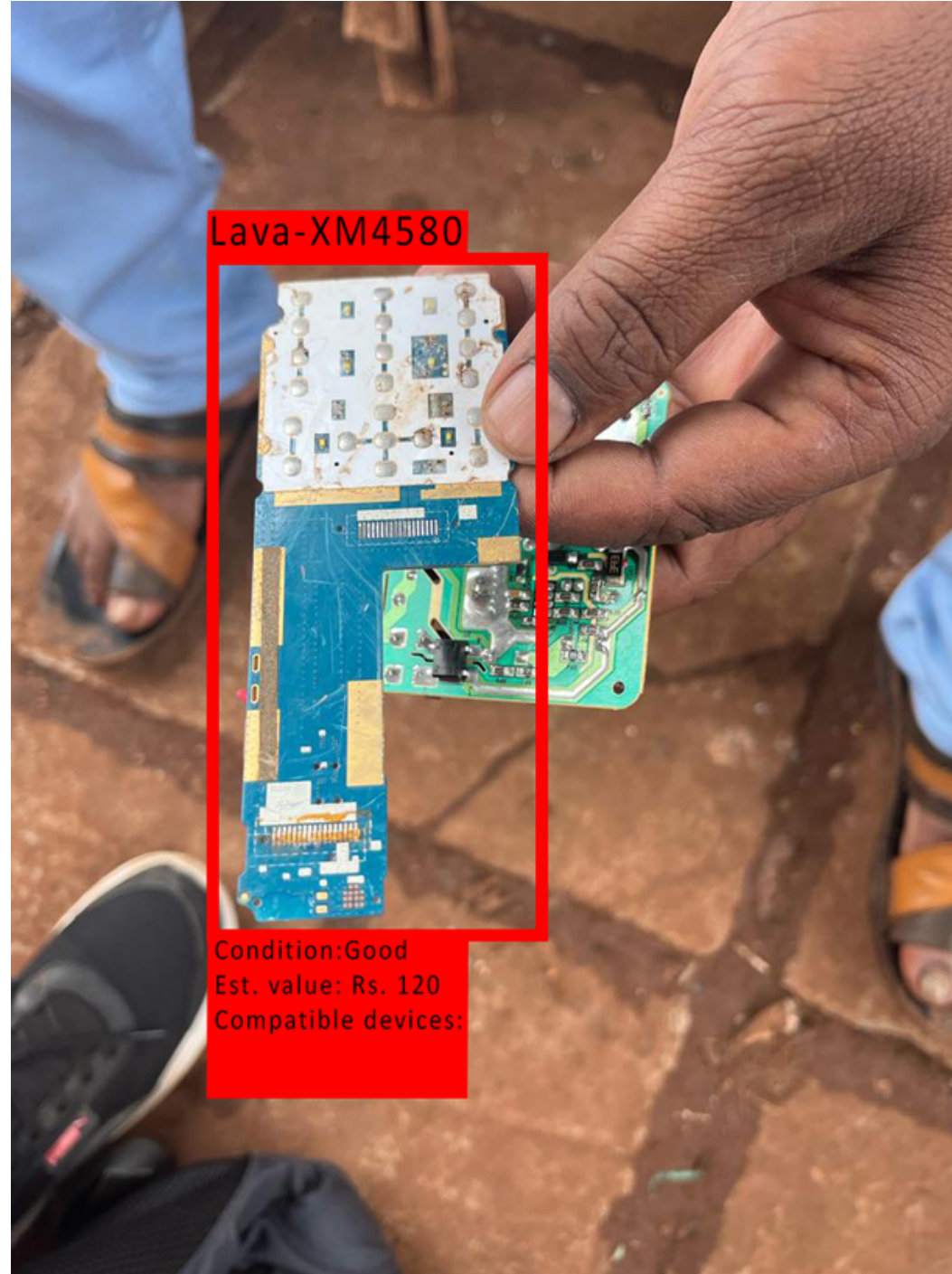
Feature 2

Assess the value of PCB by measuring the amount of valuable metals in it, and give the board's value.



Videocon-GA104

Condition: Poor
Est. value: Rs. 75
Compatible devices:

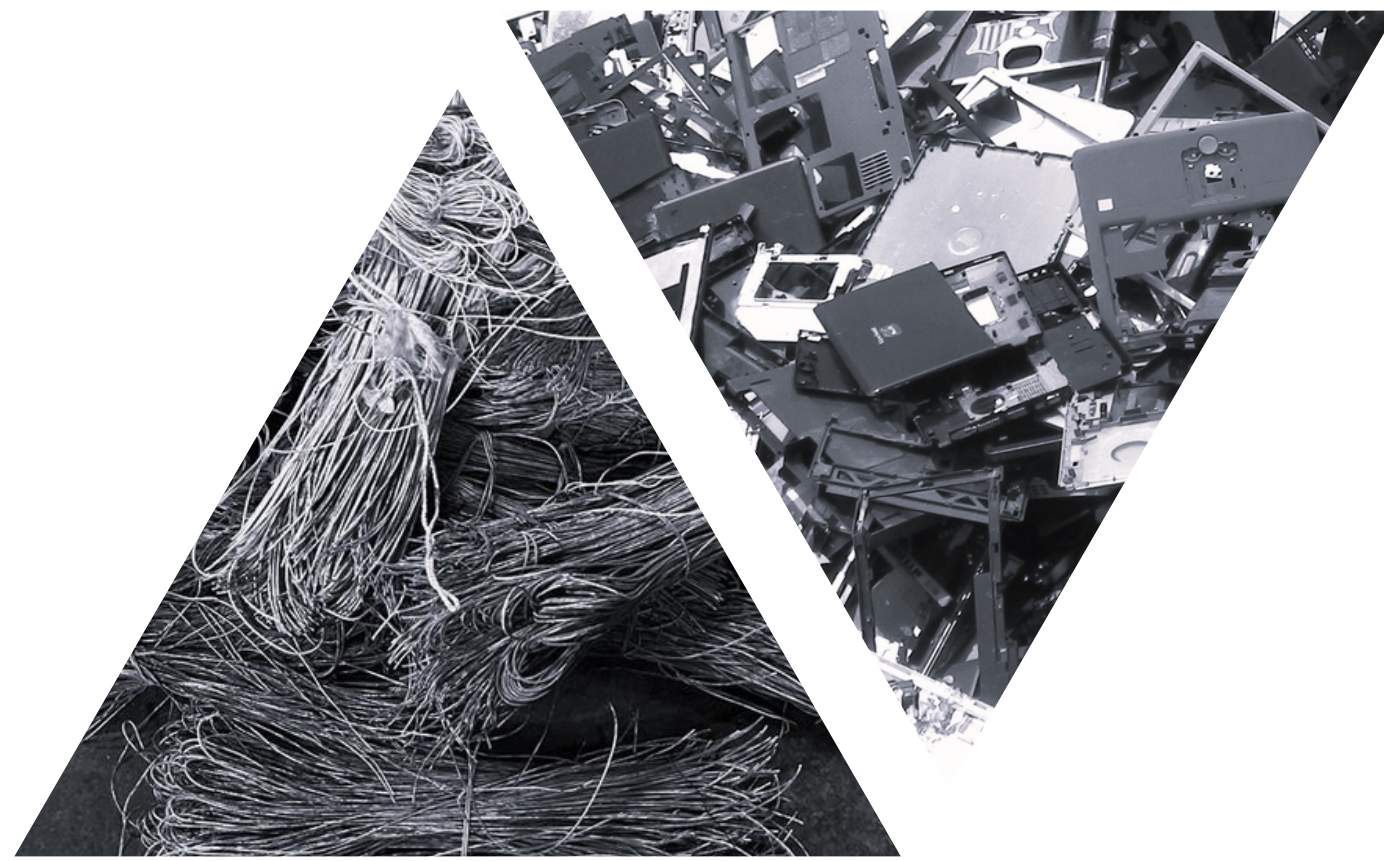


Lava-XM4580

Condition: Good
Est. value: Rs. 120
Compatible devices:

**Visual Representation
of the software**

**Thank
You**



Medical Waste Upcycling

Human Centric Design Module



Bio-Medical Waste types

Biomedical waste or hospital waste is any kind of waste containing infectious (or potentially infectious) materials.

Yellow waste

- Body parts
- Used cottons
- Sanitary pads
- Blood bag
- Used clothes
- wound dressing
- Pop
- Lab waste
- Face mask
- Discarded meds

Red Waste

- Urine bags
- Catheters
- Feeding tubes
- Gloves
- Infusion set
- Plastic IV
- Saline, Glucose bottles
- Syringes
- Dialysis kit
- Swabs

Blue Waste

- Glass wares
- Medicine vials
- Ampules
- Broken/ discarded lab wares

White Waste

- Needles
- Blades
- Lancets
- Sharp Metals
- Body screws

Bio-Medical Waste types

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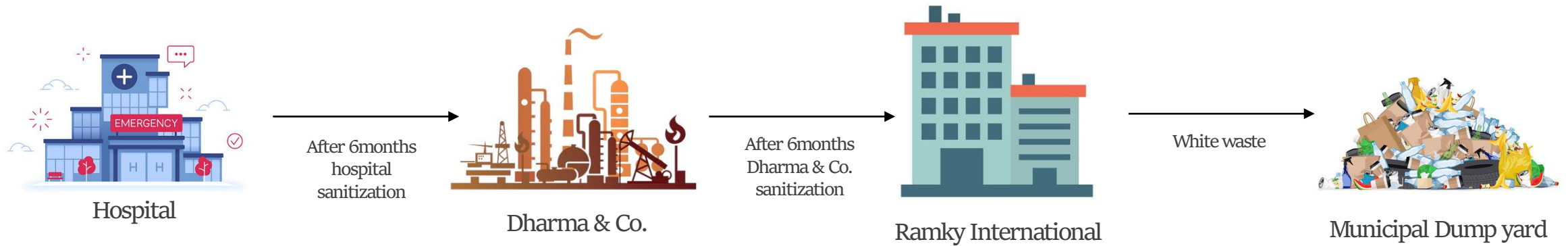
White Waste

- Needles
- Blades
- Lancets
- Sharp Metals
- Body screws

Research image



White Waste Journey Map



Construction & Demolition Waste



- Acc to population in Hyderabad, 2000 metric tones of waste are produced per day.
- As we know Zaheerabad pop is 100000, acc to that 200tonnes of C&D waste is produced per day.



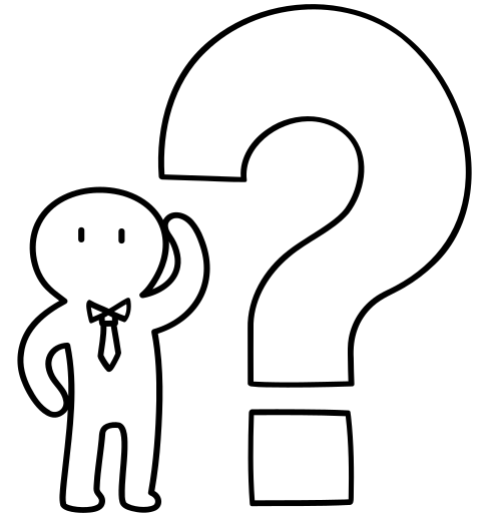
C&D Waste

+

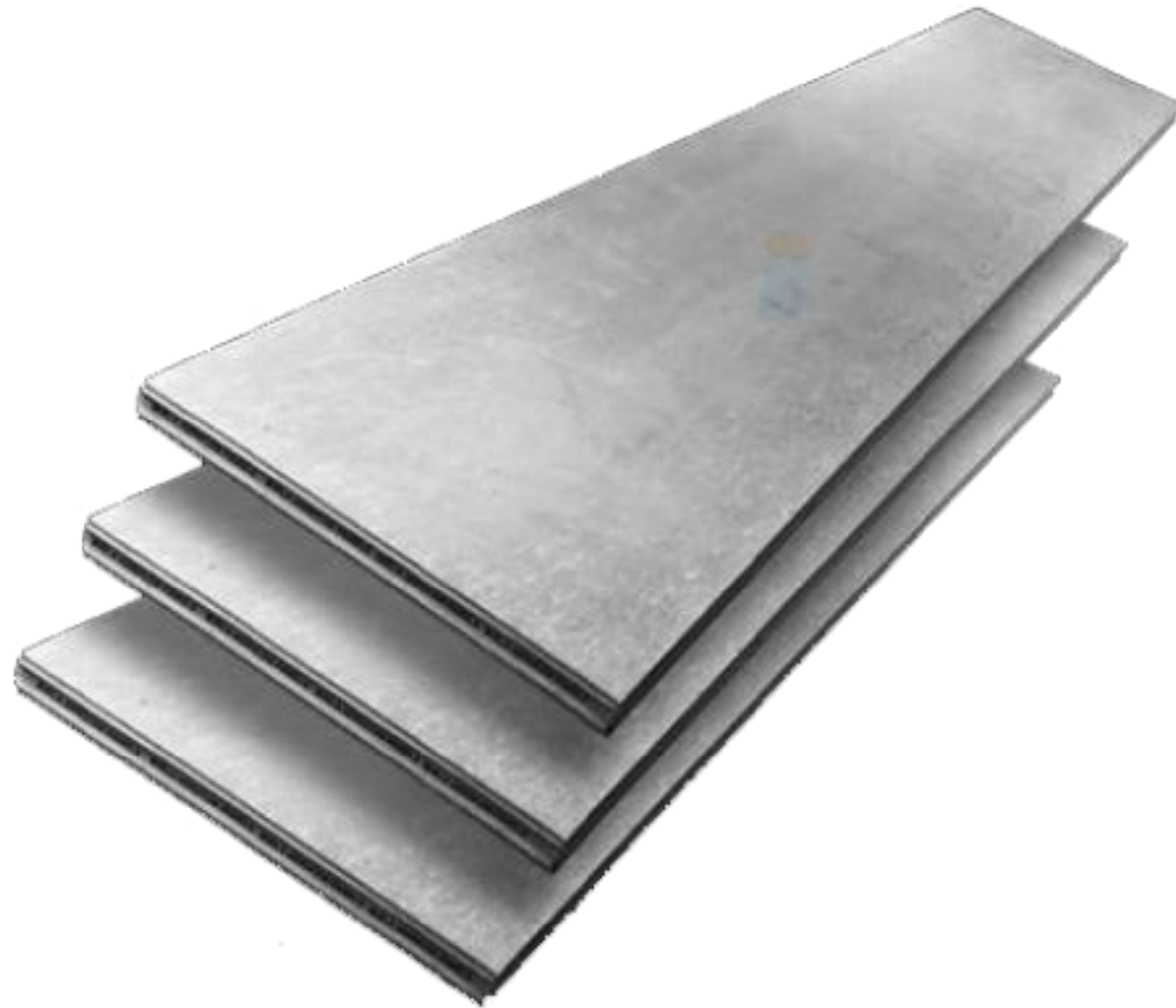


White Waste

=



Concrete Composite Panel





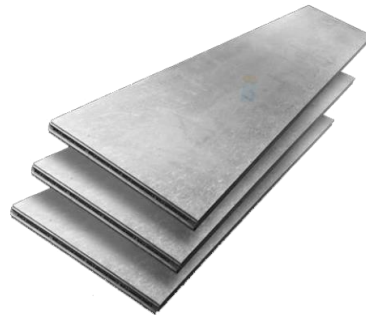
Ramky International.
(sanitized white waste)



Cutting and Segregation center



Demolition Site
(Construction and demolition waste)



Concrete Composite Panel

Business flow chart

White Waste from Zaheerabad hospitals
Per week 350kg of white waste

C&D Waste from Zaheerabad
Per week 1.2 tones of steel waste +
20 tonnes of RCC waste

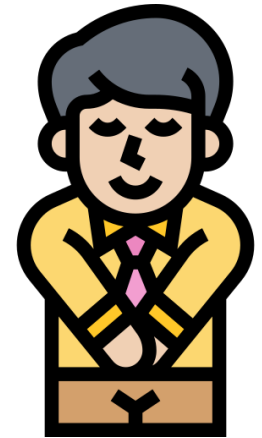
Production of panels per week
1500 kg steel+ 200 tones of C&D waste= required to make 100 panels.

- Each panel would cost Rs 2000
- Total revenue per week is Rs 2 lakhs



Devanandan KR
Kanika Bukka
Arjun Sreeram

Thank you





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The Hyderabad (India) and Vila Tiradente's (Brazil) community

Our team

The **Team 6** consist of a group of very hard-working and good looking students...

...they are....

Kremy Kelawala

Sameer Vyavhare

Samanvitha Desham

Ana Rita Galina

Beatriz Camacho Guedes

Bruna Both Philippi

Enzo Dall'Agnol Gonçalves

Vitória Ribeiro Gil

Our Process

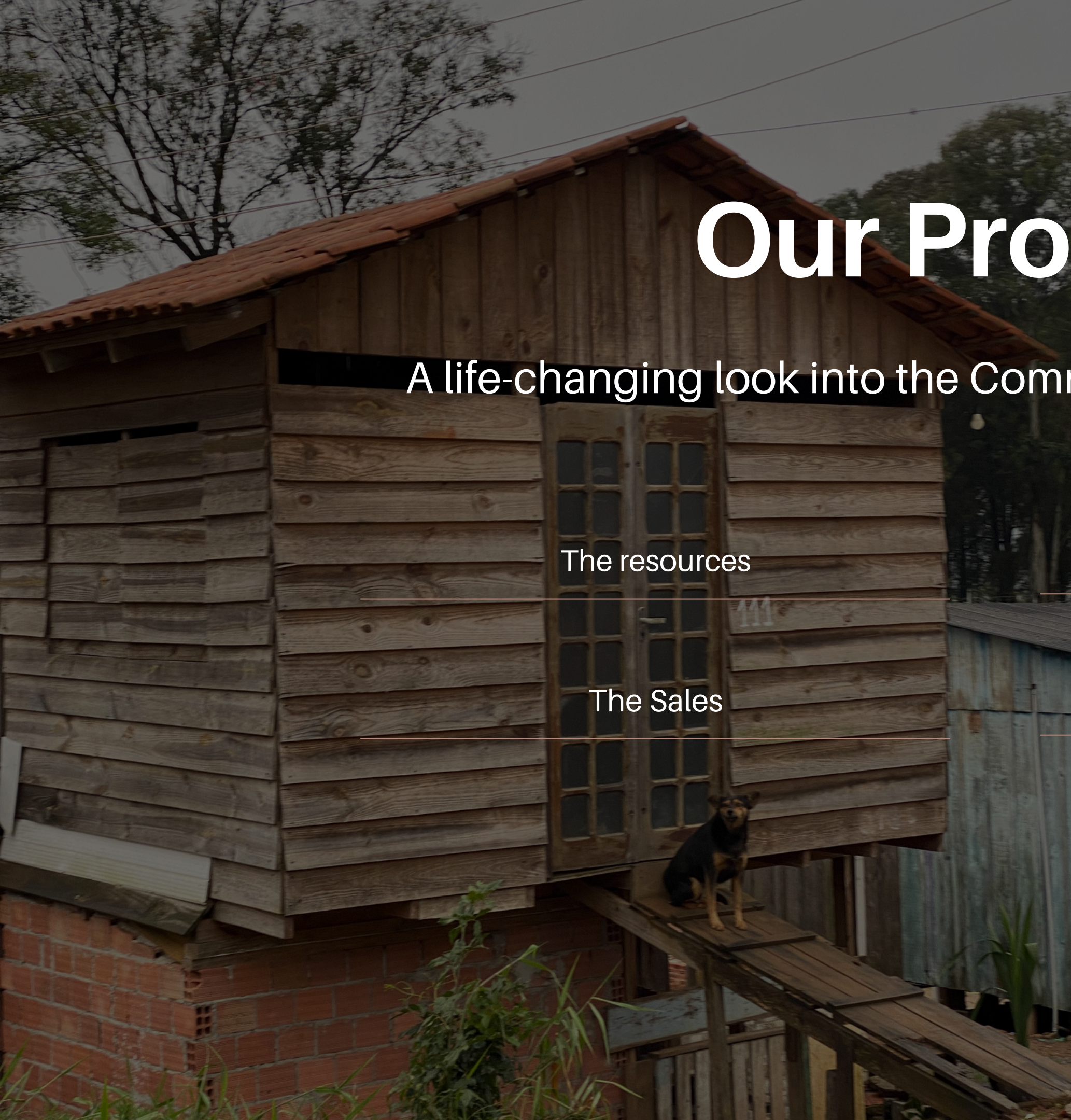
A life-changing look into the Communities around the globe

The resources

The Sales

Up-cycling through the globe

The solution



Our communities

Brazil



- Really Basic
- Precarious
- They separate and sell
- There are no machines



India



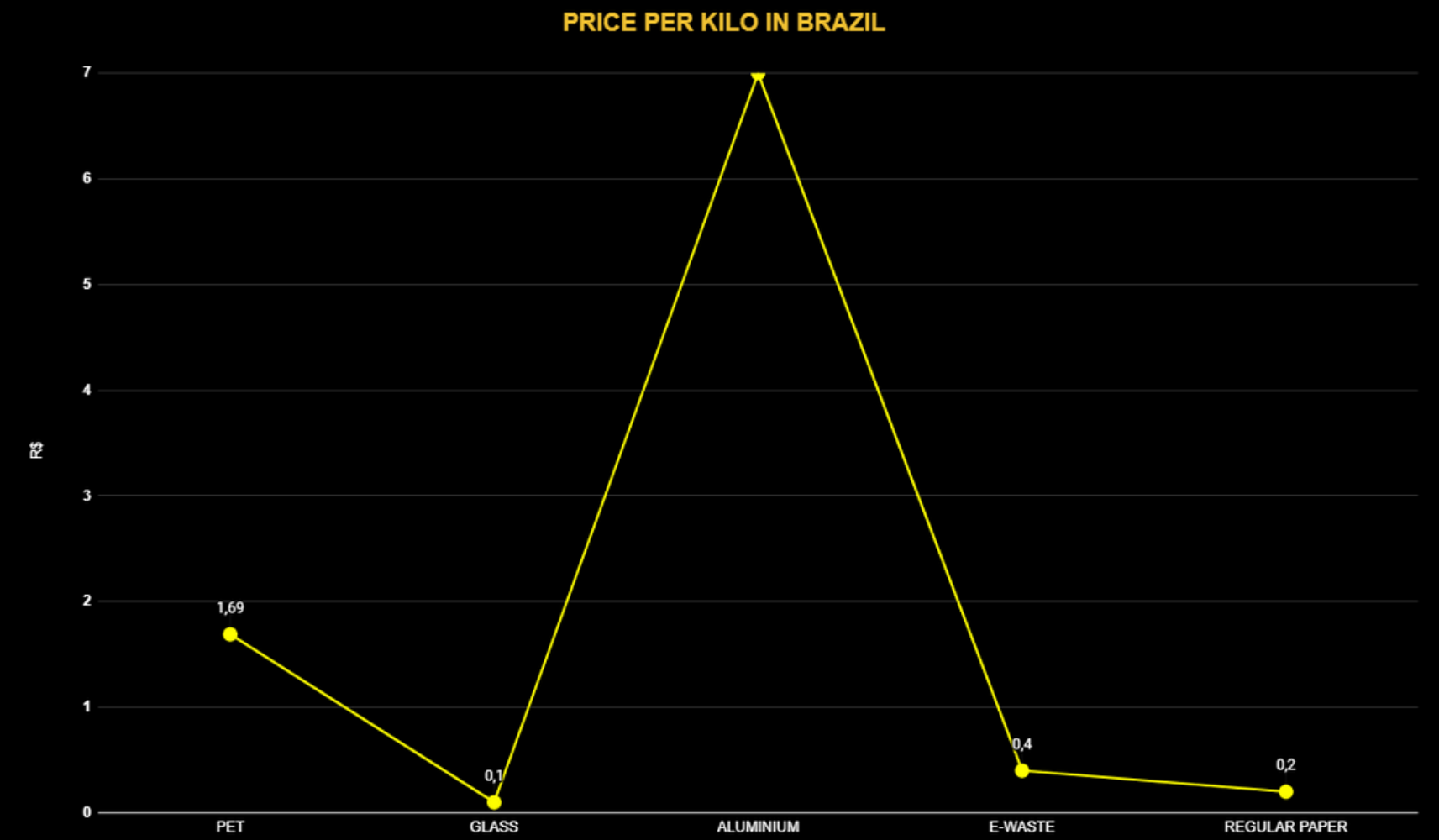
- More organized
- Precarious
- They do some processing
- There are some machines

SALES

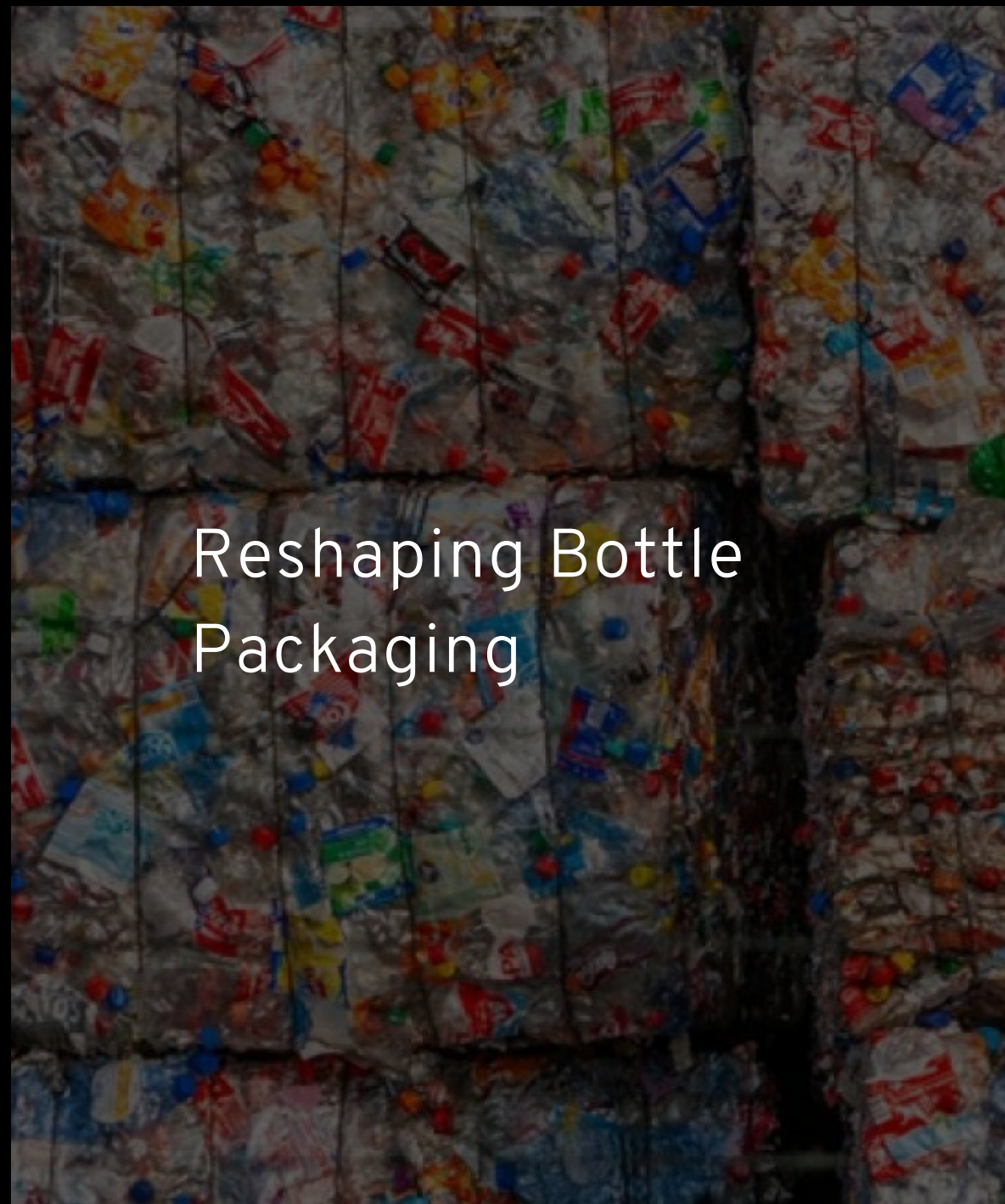
At SCRAPYARDS

Selling price for PET in India: 30-35/kg

Selling price for E-WASTE in India: 30-300/kg



≡ RECYCLING /UPCYCLING AROUND THE WORLD



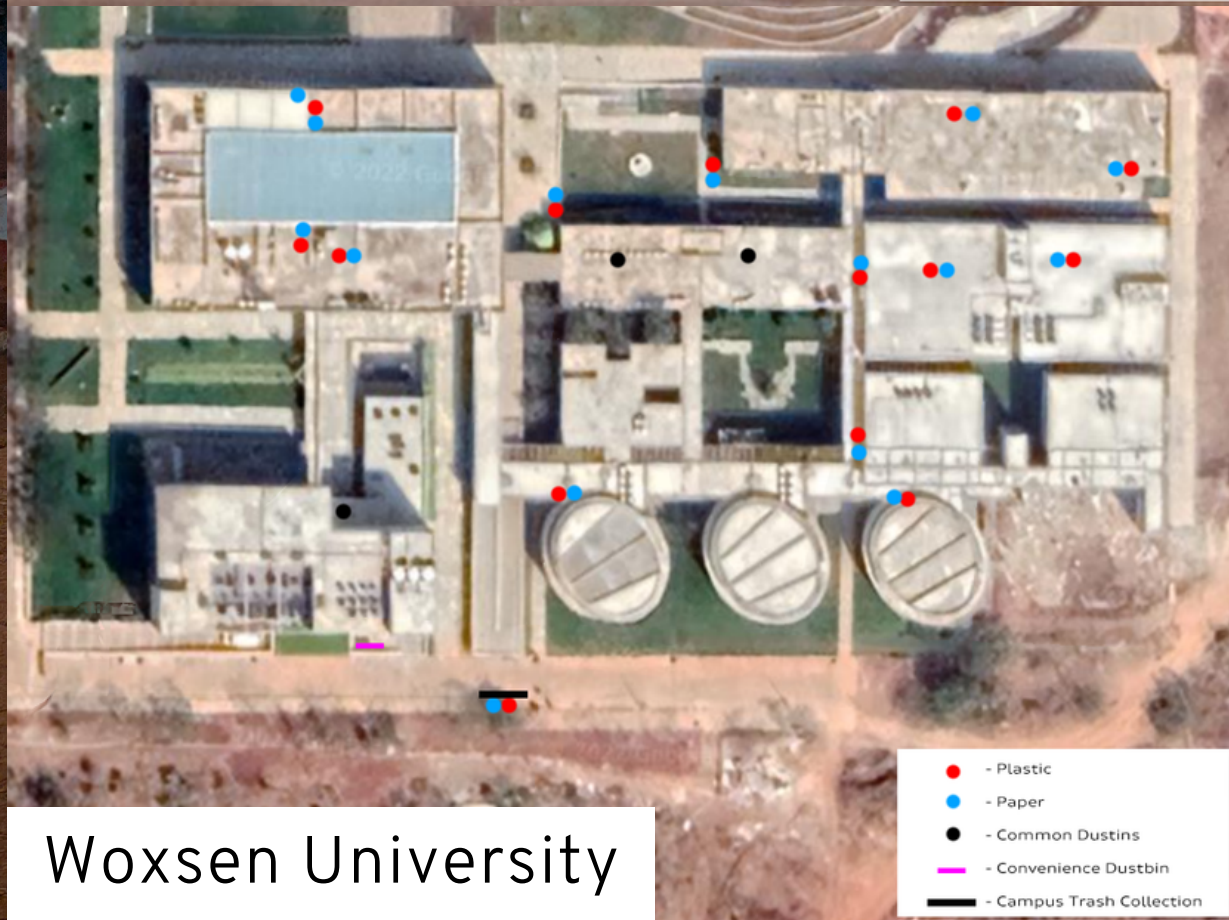
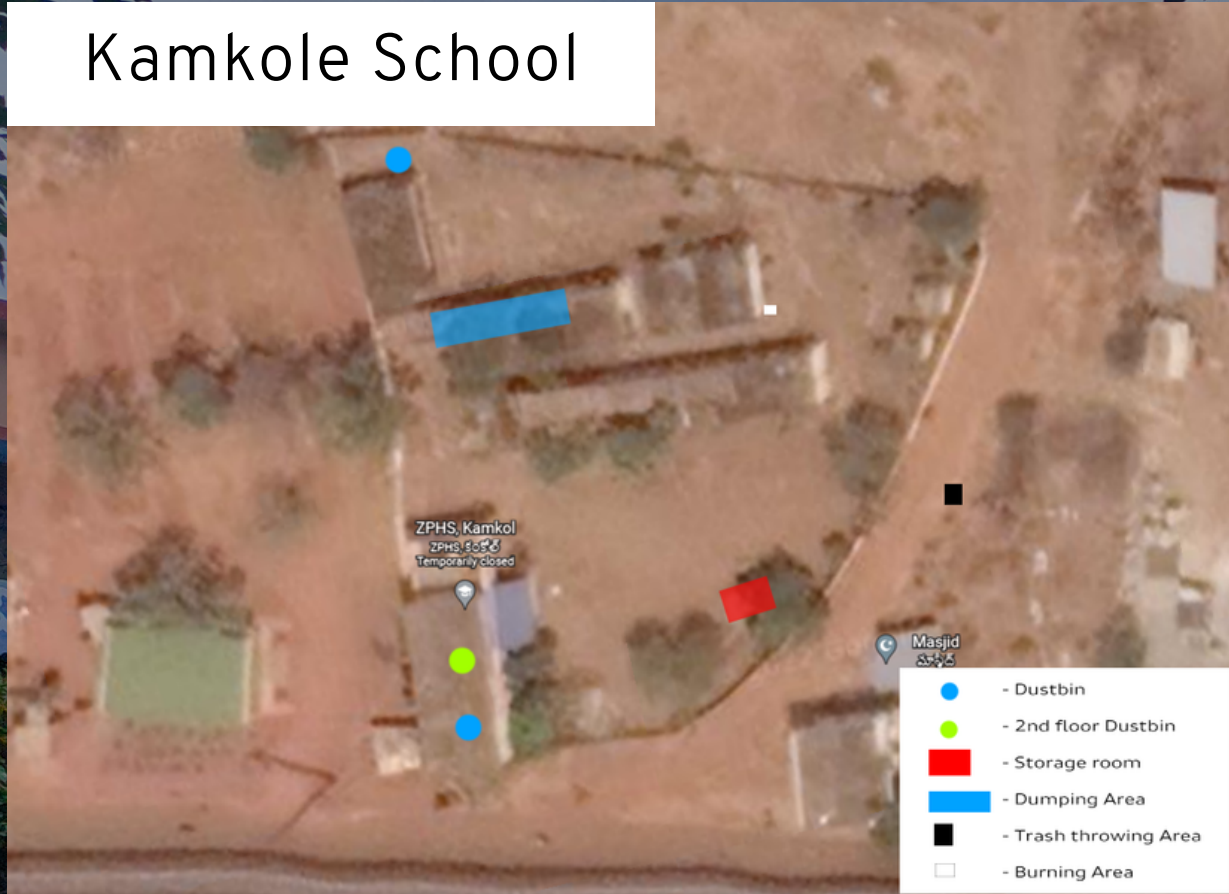


Resources

- Automotive Parts
- Glass
- PET | PVC | HDPE
- Regular Paper
- E-Waste
- **Stationary Waste**
- Organic Residue
- Hospital Waste
- Polystyrene

Obs: Waste like polystyrene can't be recycled, so they need to find new ways to deal with it

Kamkole School



Woxsen University



Waste Collection

- Paper
- Metal
- Wood
- Clay
- Rubber
- Pencil
- POP
- Thermocol
- Plastic

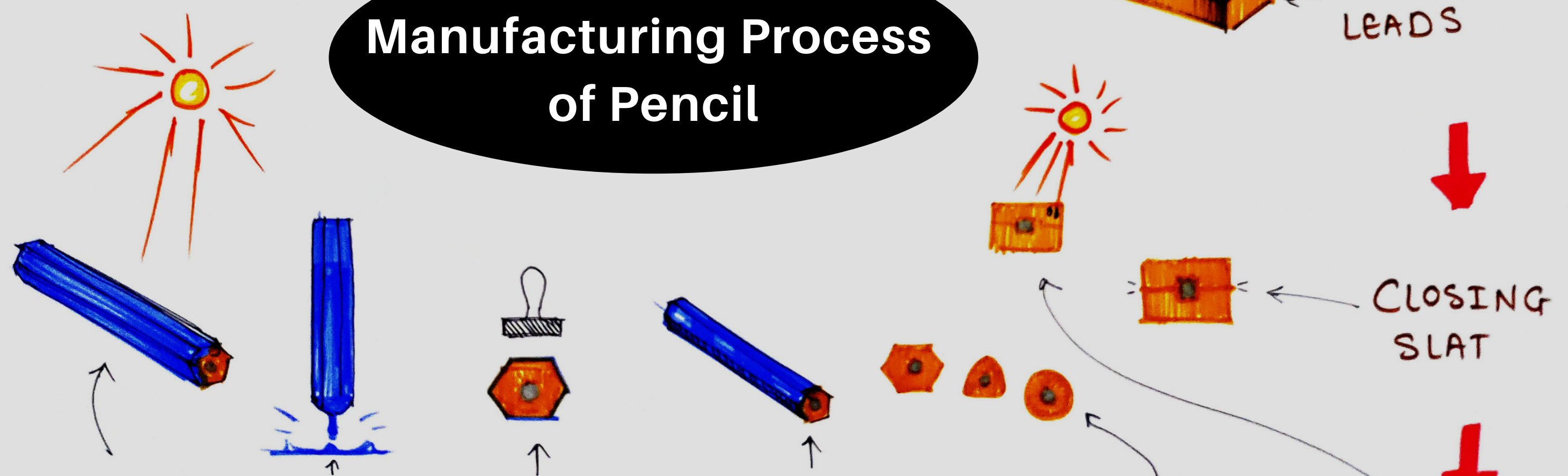
MIXING → PRESSING → DRYING → FIRING → THE WAX BATH → MILLING GROOVES



APPLYING GLUE

INSERTING LEADS

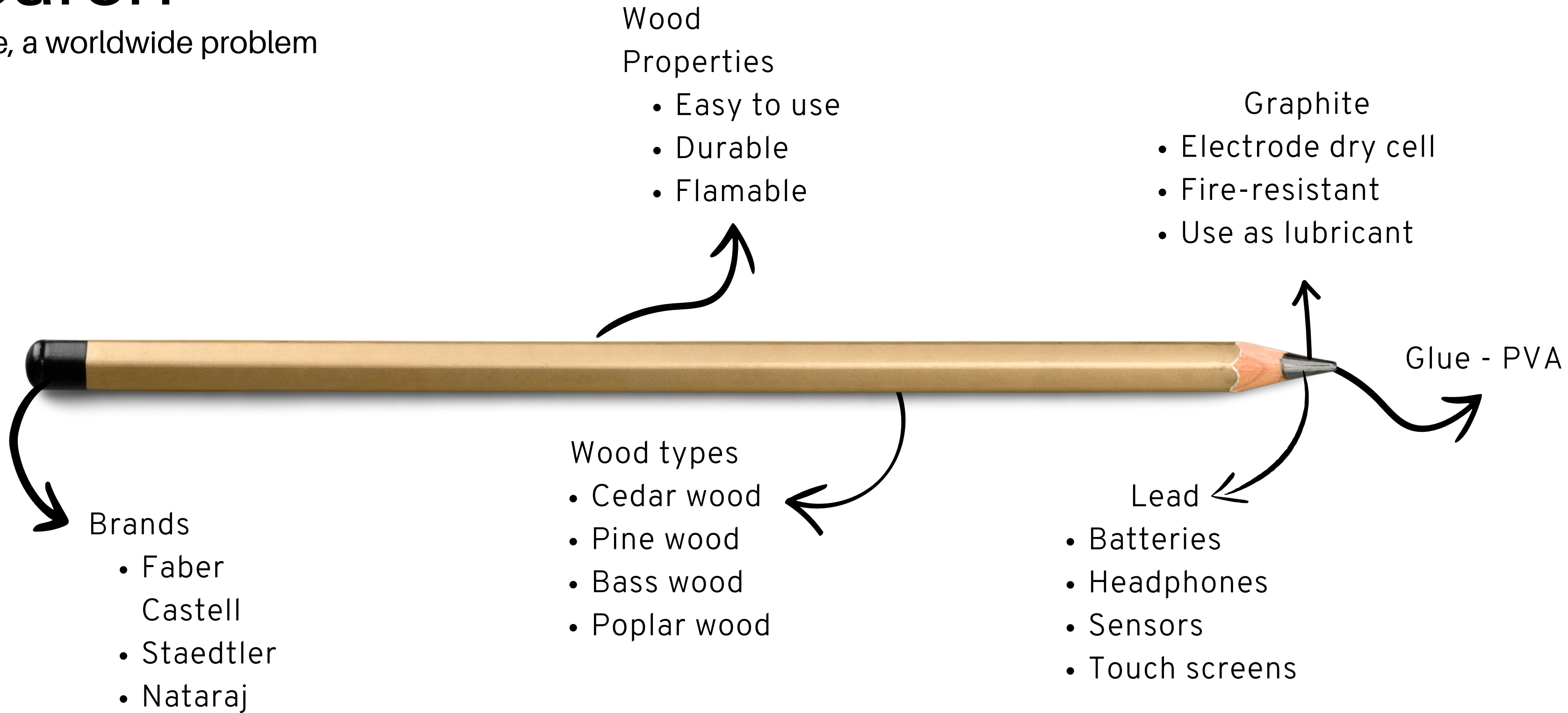
Manufacturing Process of Pencil



DRYING ← DIPPING ← STAMPING ← PAINTING PENCIL ← MILLING PENCIL ← DRYING

Research

Pencil waste, a worldwide problem



Scope

Lead Waste, Graphite



Target Audience





Step by step upcycling of graphite



Leads



Graphite Fabric



Graphite Apparel



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That's it Thank you

Perhaps do you have any questions ?



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BUSINESS TOURNAMENT

Ayush Arya
Jinoodhaya SS
Pooja Jhaveri
Joao Vitor Manna Chedid
Victor Soni
Fellipe Ferraresi
Gabriella Abage Gomes



01 TYPE

Wet waste
E-waste
Plastics
Wood
Metal scraps
Rubber
Medical

02 SOURCE

Household
Food industries
Unorganized sectors
Worship areas
Temple
Church
Mosque
Cottage industries

03 SCOPE

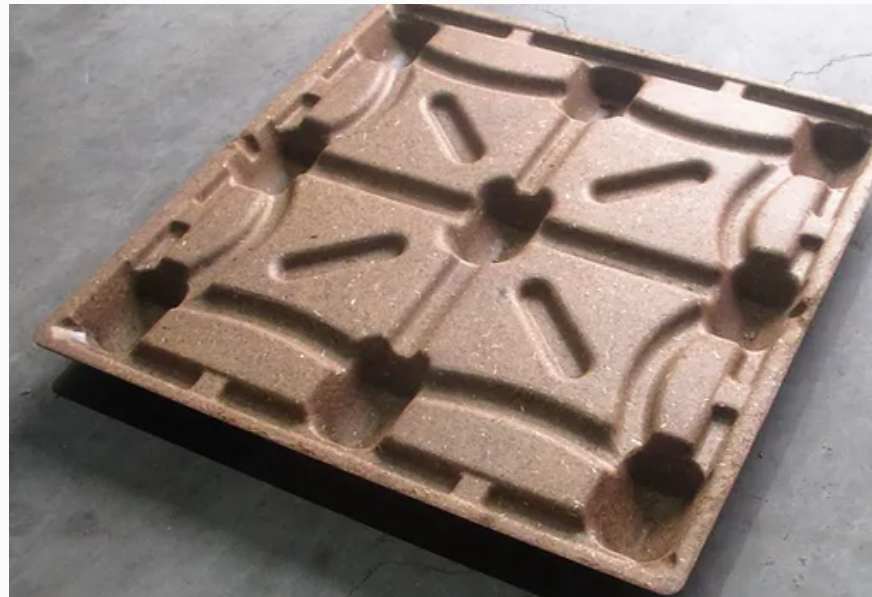
Flowers
Clothes
Coconut
Plastic
Papers
Food waste
Gardening waste
Ash

How is the waste being handled NOW!

Existing Companies



Malai is a company that makes leather out of coconut flesh.



Coco-Pallet is a company that makes pallets with coconut waste.



The Coir board is a government body that promotes and develops coir and coir products.



Carbon crafts design makes carbon tiles out of polluted air.

Thermal Conductivity
 $k_1 = 0.049 \text{ W/mC}$

TENSILE STRENGTH
 $42.09 \text{ N/MM}^2 \text{ (MPa)}$

TEMPERATURE RESISTANCE
 $30^\circ\text{C} - 80^\circ\text{C}$

(COCO DUST)

• HIGH in (K) & (Na)
 • HIGH LIGNIN (42%)
 ↳ resistance to stress
 ↳ when heated act as GLUE
 ↳ the ability of WATER TRANSPORTATION b/w CELLS

• Binds the fiber w/ husk.
 • Not reusable
 • high RETAIN WATER
 • excellent soil conditioner
 • SOIL LESS medium for HORTICULTURE

↳ in exposure to long moisture pH decrease.
 * Sodium (Na), Calcium (Ca), Magnesium (Mg)
 * indigenous Potassium (K) is relatively HIGH.

• Removed manually
 • Reusable 2-3 times
 • WATER PROOF
 • RESISTANCE TO SALT WATER
 • Soaked in pits of slow moving water body
 • As it soaks in moisture they become ELASTIC



HUSK



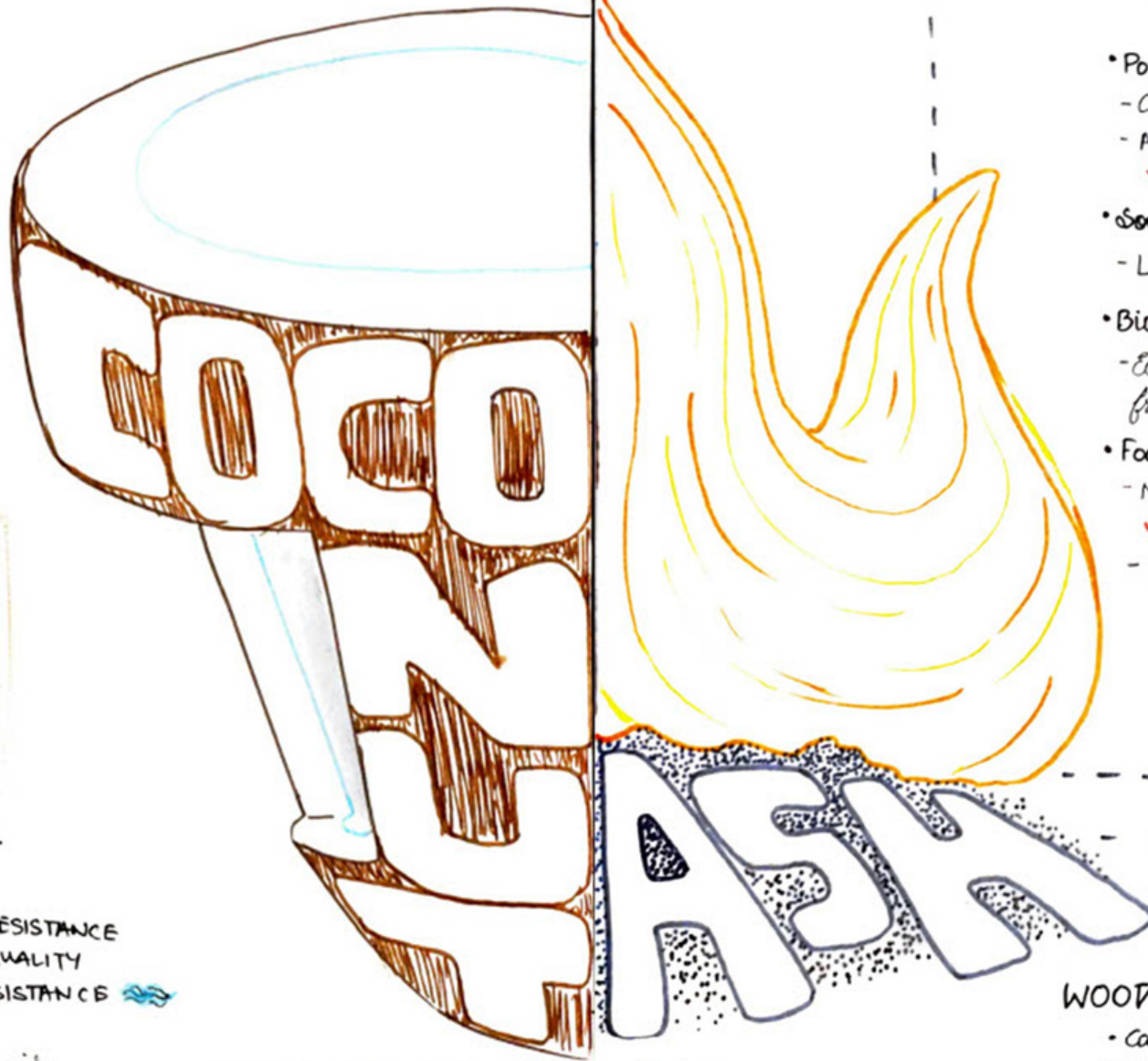
FIBERS



COIR-PITH



SHELL



TOP GRADE ACTIVE CARBON

SCIENTIFIC AND SPIRITUAL

EXISTING USES

- Fertilizers
 - Source of K & CaCO₃
 - Liming agent - soil acidity ↓
 - Organic Hydroponic solⁿ
- Composts
 - High char content
 - CARBONISATION
- Pottery
 - Ceramic Glaze (China, Japan, Korea)
 - Acts like FLUX
 - ↳ melting point of glaze
- Soap
 - Leaching + Filtration of ASH → H₂O → KOH
- Bio-leaching
 - Ectomycorrhiza - releases elements from ash
- Food Preparation
 - Nixtamalization - improves nutrition
 - ↳ Risk of MYCOTOXINS
 - Bread

AYURVEDA

- Ache
 - Sieve - stone - apply
- Sanitization
 - Ganga jal + Ash
- Anti-Fungal
 - Ash + ghee → skin issues
- Alkaline nature
 - Ash + H₂O → ↑ alkaline pH
 - Can be manipulated b/w 8 - 11 pH.
- Elements
 - Grind - sieve - mix → adds elements
 - Helps in:
 - o High BP
 - o Diabetes
 - o High cholesterol
- Manure
 - ↓ acidity of soil

COCO CHIPS

- * Husk is cut into smaller chunks
- POROUS IN NATURE
- RETAIN MOISTURE
- MAINTAIN AERATION IN SOIL
- Mixed with potting soil for plants

- FUNGUS RESISTANCE
- UNIFORM QUALITY
- WATER RESISTANCE

- mosquito coils
- incense sticks
- Playwood manufacturing
- filler in resin glue.

WOOD ASH CONTENT

- Carbon 5-30%
- Calcium 7-33%
- Potassium 3-4%
- Magnesium 1-2%
- Manganese 0.3-1.3%
- Phosphorous 0.3-1.4%
- Sodium 0.2-0.5%

RATIOS MAY VARY

INGREDIENTS:

- Nam lakdi (mango twigs)
- Cow dung cake
- Ghee
- Sweet
- H₂O
- Grains & Dry fruits
- SAMIGRAI

CONTENT

- Clove
- Sesame seed
- Nutmeg
- Seeds of kutaja
- Betel nut
- Cardamum
- Betel leaf
- Camphor
- Labhaan
- Gum resin
- Nagpaha twigs
- etc.

“

A go to beverage with medicinal benefits of
COCONUT and ASH.

”

RE-LIVING CHILDHOOD

Saving every penny to have that sip of joy, comfort and warmth we grew older, we got money now, but that time, those small moments faded away. We have money but not the childhood. Time travel is still far away, so why not we relive it now, not only by investing in our brand but by investing in nature.

COMING SOON

COASH

2022

Key suppliers

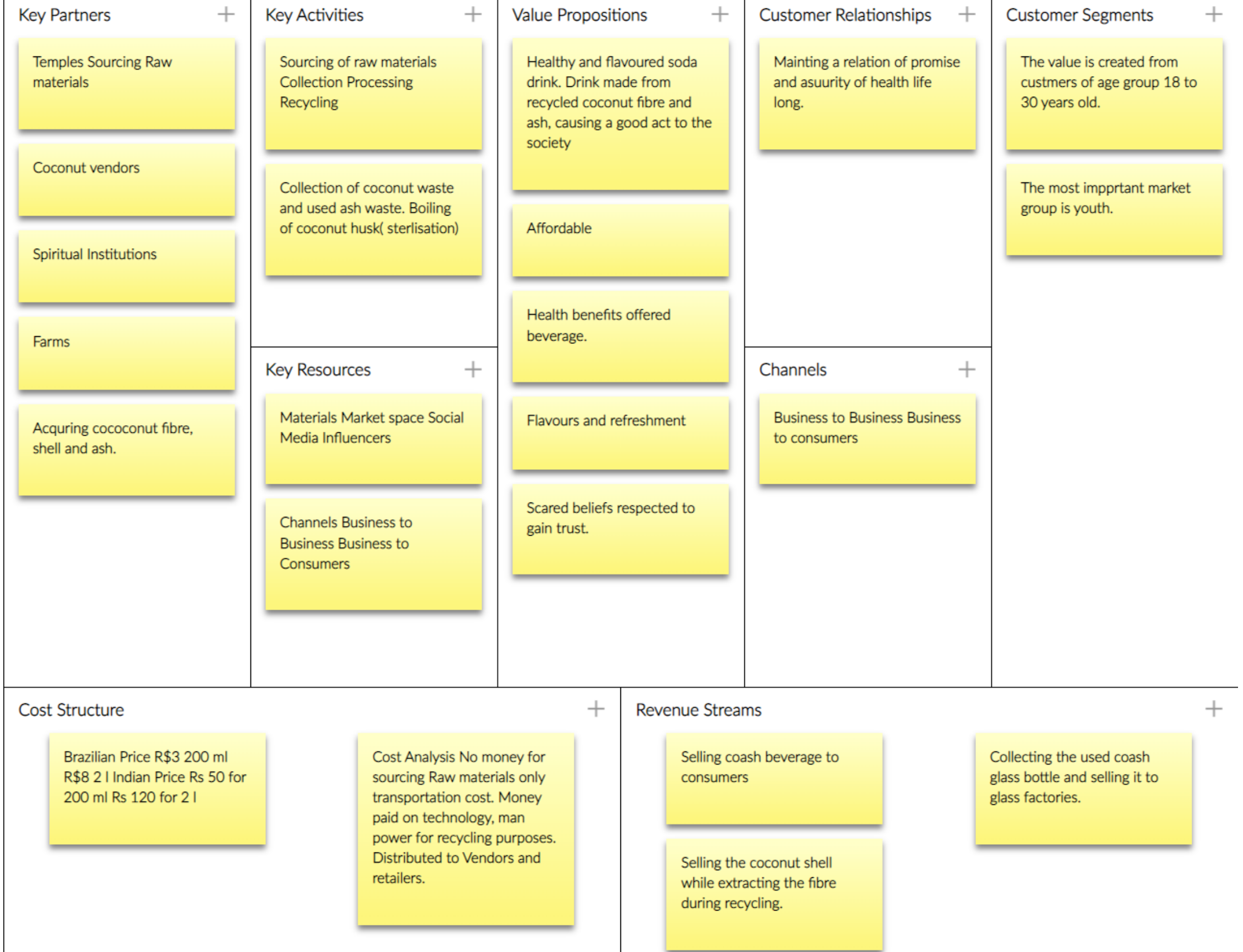
- Religious insitutions
- Farms
- Coconut vendors

Key partners

- GHMC
- Transport facilatotor
- Factory units

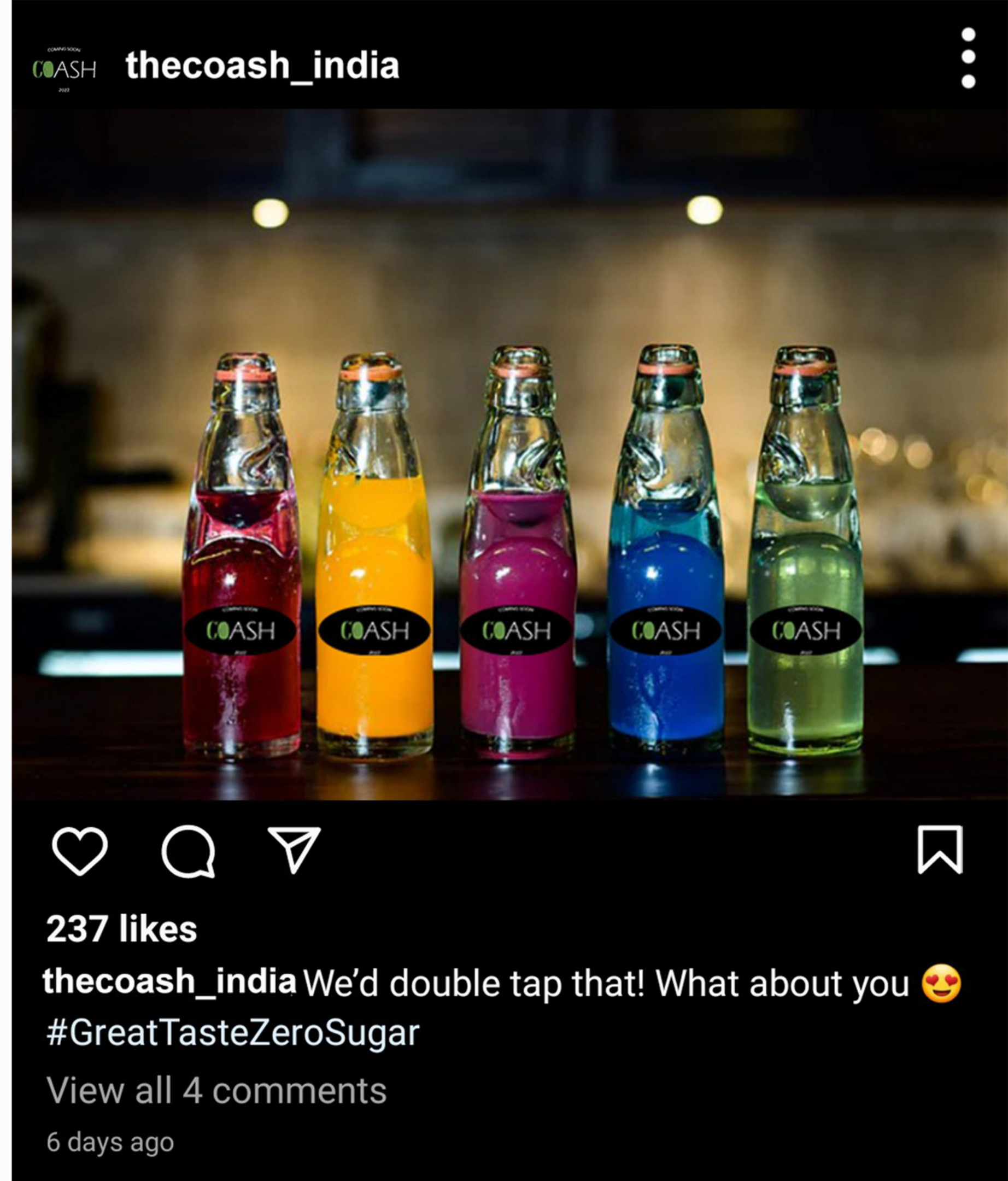
Key resources

- Coconut waste
- Ash powder
- technology units
- vehicles



PUBLICITY

Instagram (Social Media Influencers)
Facebook
Twitter
Bill Boards (Celebrity Engagement)
Youtube Advertisement, etc



Obrigado!

School of Arts and Design

Human centered design

Soham
Harita

Mentored by: Prof. Sanjay
Prof. Santosh
Prof. Surya

Research area : Zaheerabad railway station



Railway station of Zaheerabad, aerial view (Google Maps).



Bus stop of Zaheerabad, aerial view (Google Maps).

- 2-3 temporary cleaners.
- Cleaning done between 6am - 7am.
- Train isn't cleaned at this station.



Bus stand.

Research area : Zaheerabad bus stand and depot.



Food stall at bus stand.



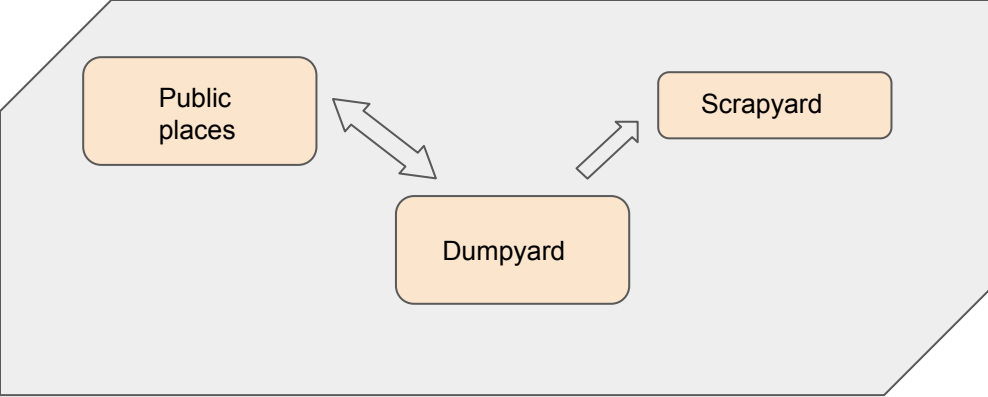
Trash cans at bus stand.



Plastic bottles segregated separately..



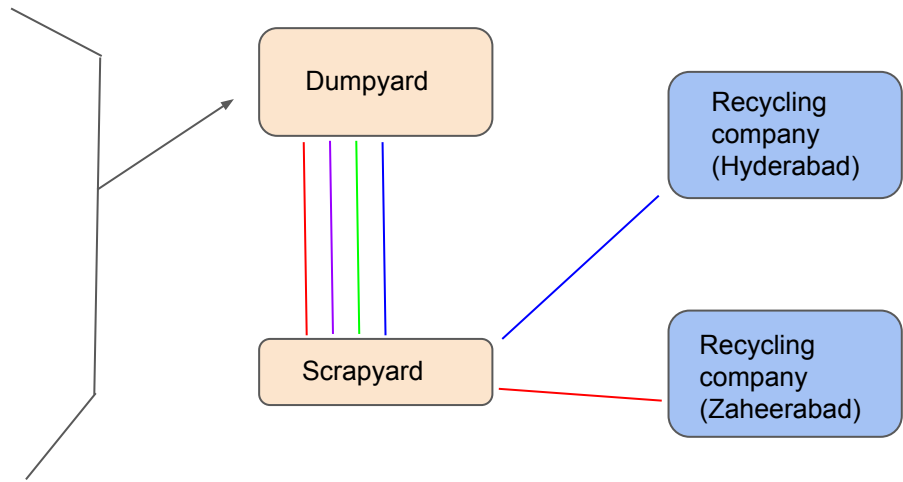
Busses cleaned after periodic intervals.



- Plastic wrappers:
 - PP ■
 - PET ■
 - PVC

- Plastic wrappers:
 - PP ■
 - PET ■
 - HDPE

- Carry bags:
 - HDPE ■
 - LDPE ■
 - Polythene



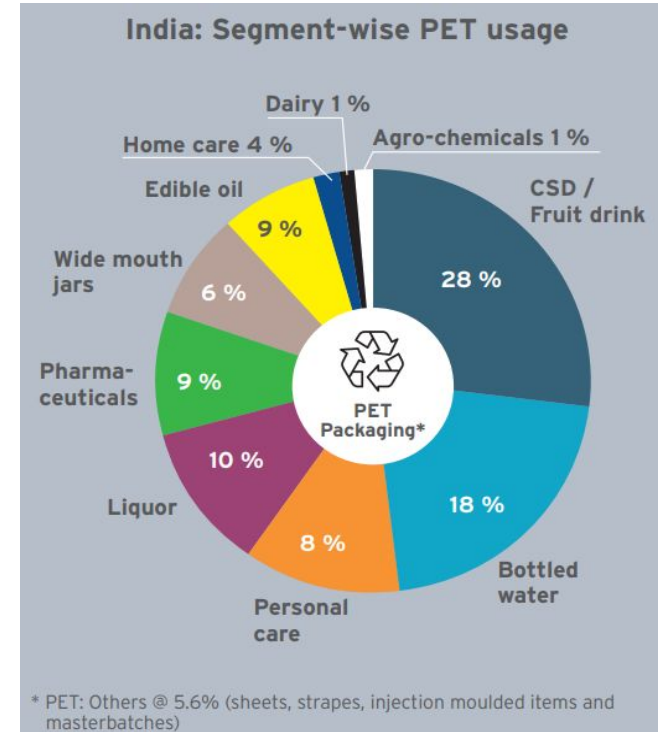
Journey map : PET plastic

PET plastic

Uses



Market size



FLOOR MATS (CHATAI)

- Easy to manufacture (weaving only used)
- Vast area of consumption (schools, household)
- Highly customisable in design.
- Versatile use case.

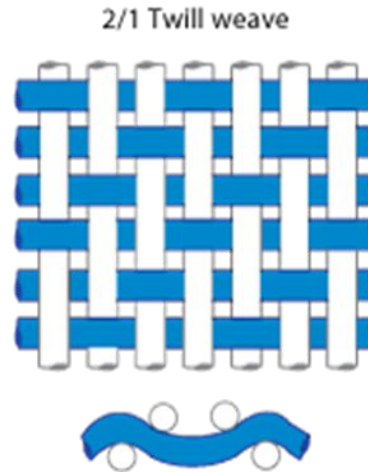


MANUFACTURING PROCESS:

1. Strips of PET bottles are made.
2. Strands are sent through loom.
3. Synthetic thread is woven into bind plastic together.
4. Mats are cut into sizes.
5. Borders are sealed by covering it with polyester cloth.

MACHINERY:

1. Cutter
2. Loom
3. Die Cutter mechanical
4. Sewing machine



Weight of one mat: 500g

PET bottles collected in one day: 12kg

PET bottles collected in one month:360kg

720 mats made from the collected raw material.

Cost of one mat - 350Rs

Turnover - Operational cost = Profit/month

2,52,000 - 1,98,000 = 54,000

Raw material - 18,000Rs

Travel, sales, logistics,
premises, salary - 73,000Rs

Machinery - 1,07,000Rs

Thank You