



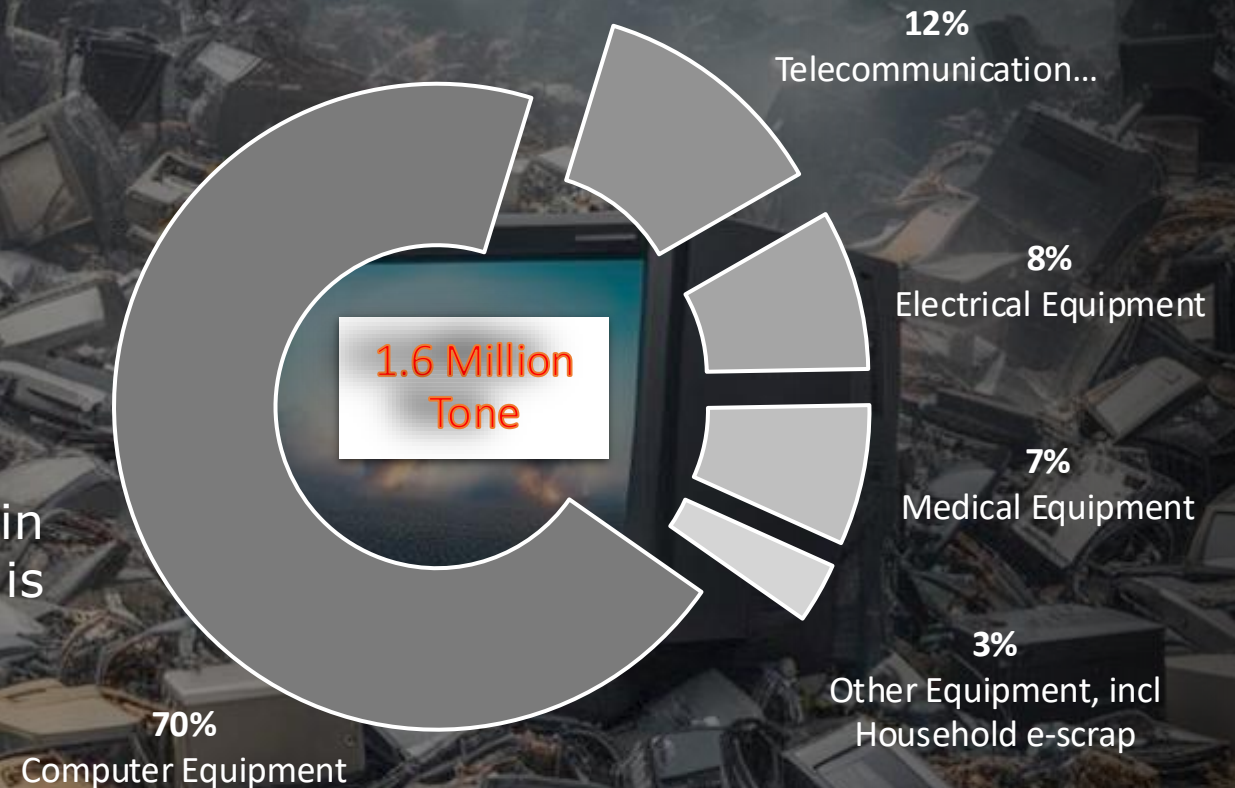
EVERGREEN RECYCLEKARO INDIA PRIVATE LIMITED

Together, lets shape Tomorrow, today

33%

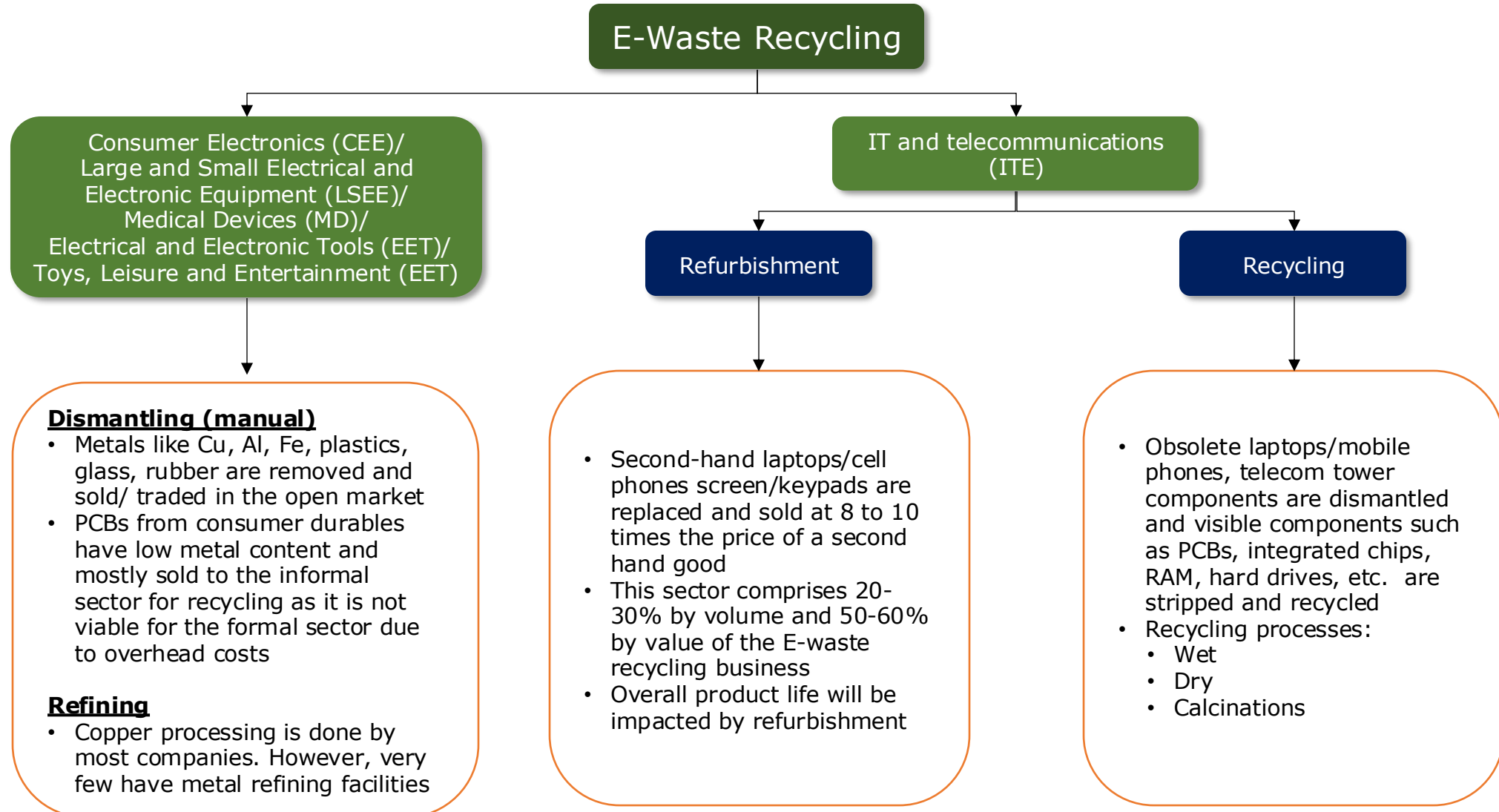
E waste Recycled

In 2023, the e-waste management market in India was valued at US\$1,660.46 million, and is projected to reach US\$5,198.52 million by 2032



E-Waste Recycling Industry in India

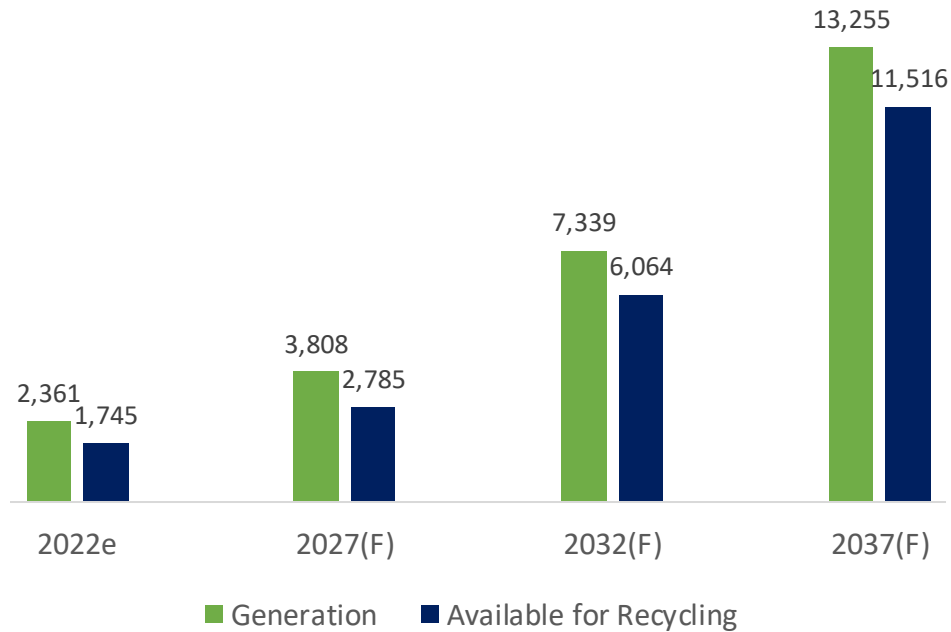
IT goods and telecommunication products are mostly preferred by formal E-waste recyclers



India: E-waste Market Overview

India's E-waste generation is expected to increase to **13,255 kt by 2037**

Overview of India E-waste Market (kt)



Growth Rates	2022-27	2027-32	2032-37
Generation	11%	14%	13%
Available for Recycling	10%	18%	14%

Note: Generation includes refurbishment market

Commentary

- Due to regulations, the Indian E-waste market has witnessed considerable efforts from producers /manufacturers of EEE (as part of EPR targets)
- The number of registered E-waste dismantlers/recyclers increased from 312 in June 2019 to 472 in April 2022. However, most of them are involved in just manual sorting and mechanical dismantling of E-waste
- Few recyclers in India have metal recovery facilities with apt environmental controls mechanisms

Why do we need Recycling



Reduce waste

Recycling reduces the waste sent to landfills as the waste products are recycled to produce raw material for the manufacturers, which in turn completed the circular economy chain.



Protect the ecosystem

By recycling we are allowing minimal waste generation and reduce the incineration and landfills rate by great extent. As a result this prevents the pollution and reduces impact on ecosystems.



Save Energy

Recycled products consume less energy to process compared to new raw materials. Recycling also reduces the procurement cost, logistics cost and purchase cost compared to new raw materials.



Reduced Carbon Emissions

As recycling consumes less energy and helps reduce the carbon footprint and emissions, this results in minimizing the methane-release waste from landfill sites, which contribute to climate change.

Our Mission

KEEP OUR ENVIRONMENT RESOURCES SAFE FOR THE FUTURE GENERATIONS



Our mission is to keep “our communities clean and healthy through cost effective recycling services and keep our natural environment and resources for the future generations”.

We focus on enhancing the use of sustainable energy throughout the globe. We have government approved sustainable facilities and home grown technologies to recycle the waste effectively with yearly recycling capacity of **7500 metric ton's**.

Constant engagement with industries, refinement of our recycling technology, quality improvement and creation of unique/customized standard operating procedures for all tech and non-tech aspects of the recycling process

Our Vision

MAINTAIN SUSTAINABILITY AND SUPPORT OUR NATION'S CIRCULAR ECONOMY



To be amongst the top 10 recyclers of the world having active engagements with other companies, producers, manufacturers, retailers, citizens, profit & non profit organizations to help them recycle efficiently and thus create a meaningful and positive impact on our environment

Our vision is to “[Maintain sustainability and support our nation's circular economy](#)”. We persistently try to reach out to consumers and corporates to educate them about proper channels of recycling, through our social media marketing and blog posts.

About Us



Recycle Karo is one of the largest e-waste recycling organization authorized by the Maharashtra Pollution Control Board (MPCB) for Recycling of Electrical and Electronic waste with yearly e-waste recycling capacity of **7500 MT** and **4200 MT** of battery recycling capacity. Recycle Karo ensures good quality services and environmentally responsible operations.

With more than 13 years of experience into recycling business, equipped with latest technology for material extraction, we have been a popular choice among the corporate companies as their recycling partner.

Recycle karo has been efficiently providing services of e-waste recycling, battery recycling, material extraction and end to end office demolition services.



2013

Started e-waste dismantling facility – 50 MT
(First corporate order received for e-waste collection)

2016

Renewed E-waste Recycling Capacity to 1000 MT
(First rented facility at Wada, Palghar)

2018

Started pilot scale battery recycling plant

2021

Evergreen Lithium Production plant set up

2023

Renewed E-waste Recycling Capacity to 7500 MT
(4874 MT order of EVM recycling)

2024

Renewed Battery Recycling capacity to 4200Mt

2010

Started with paper recycling
(Intro Mobile App for paper waste collection)

2015

Started to extract precious metals from e-waste

2015

Started to extract precious metals from e-waste
(Gold, Silver, Platinum and Palladium)

2019

Renewed E-waste Recycling Capacity to 2400 MT

2022

Started Evergreen Lithium Recycling production plant with CPCB consent to operate license 2200 MT

2023

Started Aluminium Recycling Pyrometallurgy Plant with capacity of 600 MT

Message from the Founder

RECYCELKARO ZIMMEDAR BANO



RAJESH GUPTA

FOUNDER

We won't let your efforts go to waste. Literally! Because what's trash to you, is treasure to us. Having spent the last 8 years in researching and implementing various techniques for recycling paper, metal and electronic waste, RecycleKaro is also **the first and only lithium and nickel batteries recycling unit in India.**

Our trash-to-riches initiative has helped several large organizations to effectively eliminate waste from the source. Our **indigenous electronic and metal recycling unit in Wada helps companies recover and convert waste into re-usable raw materials.** We lend our expertise to help companies outside India to set up similar homegrown and indigenous practices to treat waste using minimum energy.

How can we Help?

TIMELY RECYCLING

We provide end to end timely recycling services across PAN India.
Collection, Dismantling, and Recycling

E-WASTE RECYCLING

We are authorized by MPCB to collect, dismantle, segregate, store and recycle all types of electronics waste and lithium-ion batteries



e-Waste

RECYCLING CERTIFICATE

We provide the recycling certificate along with Form 6 and Form 2 as per MPCB norms with details of e-waste recycled and materials recovered. **Help meet your EPR targets.**

SERVICES PAN INDIA

We have our reach across PAN India and have been providing recycling services to multinational companies across INDIA, since year 2010.

Our Experience

14 YEAR OF EXPERIENCE IN RECYCLING

“ Nothing ever comes to one, that is worth having, except as a result of hard work ”

Booker T. Washington

7500

Metric Ton of e-waste recycling capacity PA

4200

Metric Ton of Battery recycling capacity PA

400+

Customers

1500+

Completed Projects



Our Services

BUILD SUSTAINABLE ECOSYSTEM IN RECYCLING

E-WASTE

All types of electronics waste is recycled from mobile phones, laptops, desktops , servers, UPS to the batteries of electric vehicles. We use processes of recycling which are safe to environment

BATTERY RECYCLING

With our metal solvent extraction plant, we successfully extract metals like, Cobalt, Nickel, Manganese and Lithium

Extended producer responsibility (EPR)

Extended Producer Responsibility (EPR) of producers are regulated through grant of EPR Authorization by CPCB. We help manufacturers to achieve their annual EPR targets with our recycling activities.

BUSINESS WASTE

We provide recurring waste collection services for different types of dry waste, like IT products, Paper waste, Plastic waste, Office cables and wires



E- Waste & Business Waste Recycling

WORKING TOWARD ZERO EMISSION

We recycle a broad spectrum of electronic and Business waste, encompassing everything from mobile phones, laptops, desktops, servers, , IT products, Paper waste, Plastic waste, Office cables & wires and UPS systems to electric vehicle batteries. Our recycling procedures prioritize environmental safety and sustainability.



18 Acres Of Land For Factory



300+ Workforce



1000+ Trees Planted Across Factory

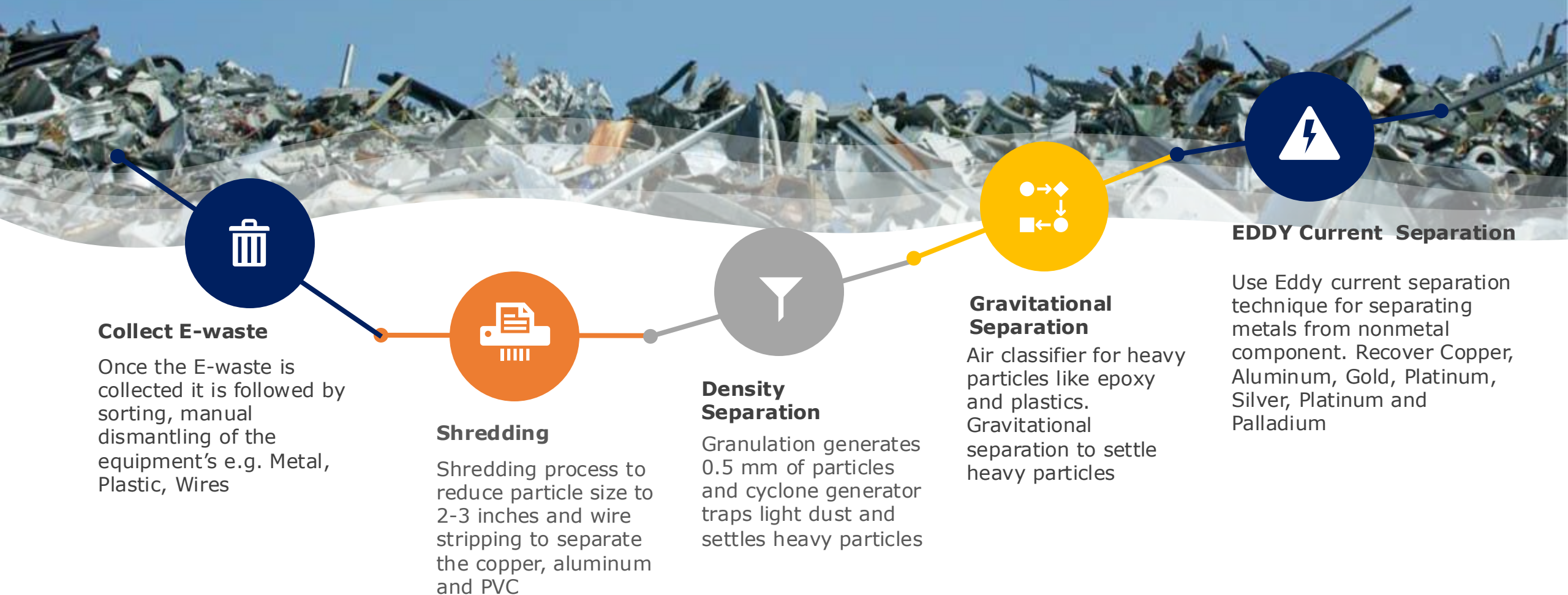
Recyclekaro specializes in the processing of electronic scrap, a complex and diverse category of materials.

Our expertise enables us to proficiently recover and refine various types of **precious metal-bearing e-scrap**

Our commitment to **recycling end-of-life electronics** not only prevents these materials **from ending up in landfills** but also **reduces the demand for newly mined metals**.

Our recycling processes are intricately designed to **minimize the environmental impact of e-scrap**, ensuring the **safe recovery of valuable resources** and the proper handling of hazardous materials.

E- Waste & Business Waste Recycling



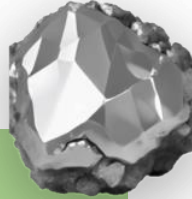
Metal Extraction from e-waste and Business waste



CU 29
Copper



AU 79
Gold



Ag 47
Silver



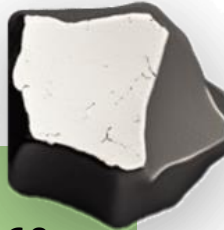
PT 78
Platinum



TA 73
Tantalum



RH 45
Rhodium



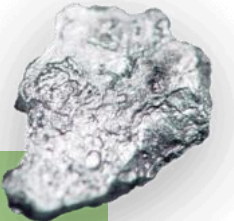
ND 60
Neodymium



PD 46
Palladium



RU 44
Ruthenium



IR 77
Iridium

Battery Recycling

Evergreen **Recyclekaro** becomes the first Indian company to achieve over **99% recovery** in **EV batteries**

Batteries we Recycle:

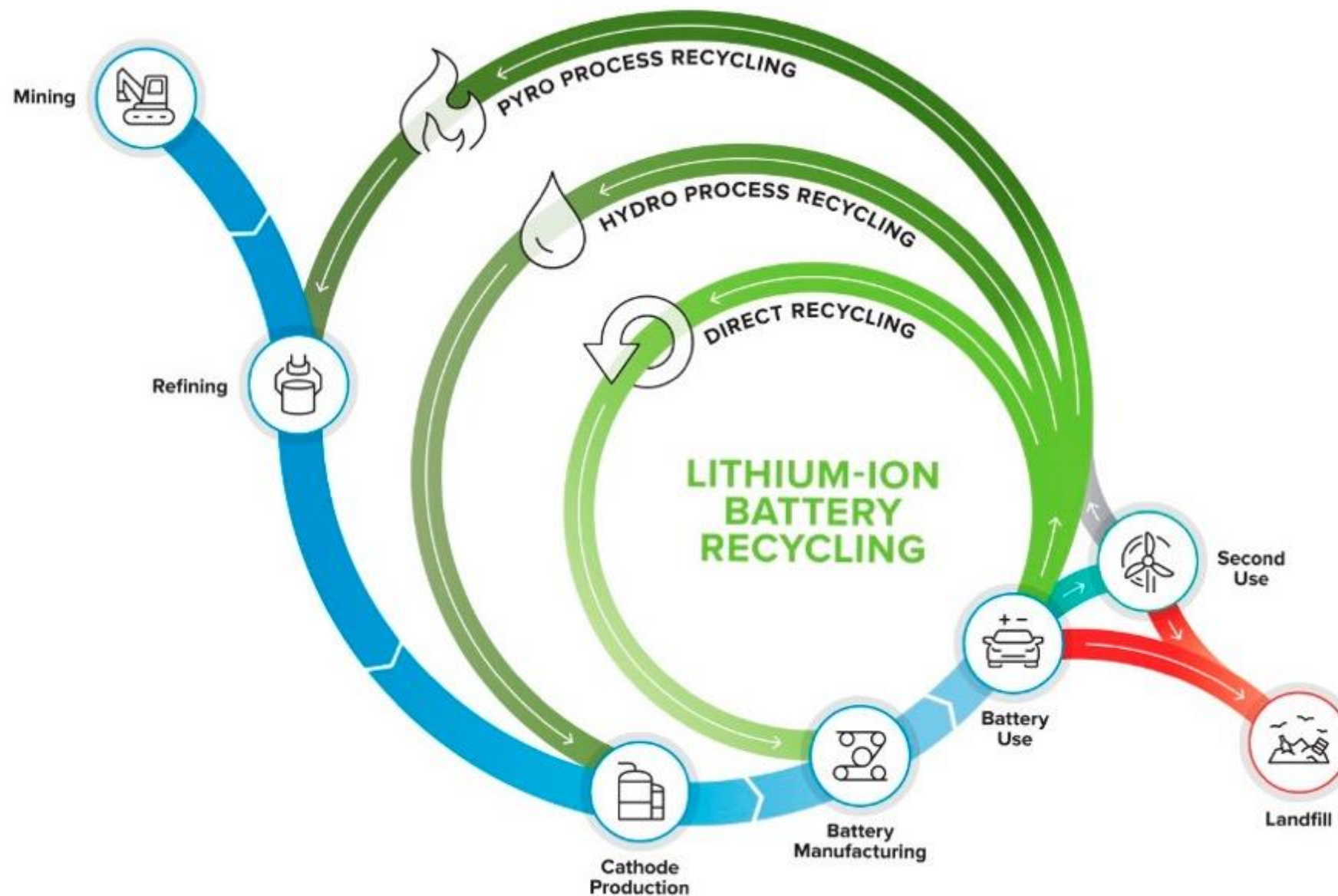
Batteries – Lithium-Ion, Nickel Metal Hydride, Nickel Cadmium (rechargeable -NiCad)

JMK Research estimates that India's Li-ion battery market will reach a staggering 132 GWh by 2030, translating to a potential \$1 billion opportunity in the battery recycling sector.

50%

Material Value Lost In
"Smelting Batteries"





Battery Recycling Process

Collect batteries

We procure damaged / end of life lithium-ion batteries from corporate IT companies, EV automobile companies and local aggregators for recycling



Shred batteries

Batteries are safely discharged and shredded using shredding machines to create black powder / black mass. Copper (Cu), Aluminum (Al) and plastic are separated at this stage



Process black mass / hydroxide from ores

Use hydrometallurgy process to leach the black mass and separate the metals using solvent extraction process for different metals. Precipitate and convert the same to salt form.



Output Metals

The metals which are extracted in our process are Lithium Carbonate (Li_2CO_3), Cobalt Sulfate (CoSO_4), Nickle Sulfate (NiSO_4) and Manganese Sulfate (MnSO_4) with more than 99% quality.



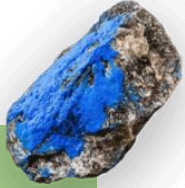
Zero Discharge

We run a zero discharge plant as at the final stage we have installed multi-effect evaporator plant, where the final output is Sodium Sulfate (Na_2SO_4).



Metal Extraction form Battery Recycling

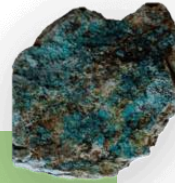
WORKING TOWARD ZERO EMISSION



CO ²⁷
Cobalt



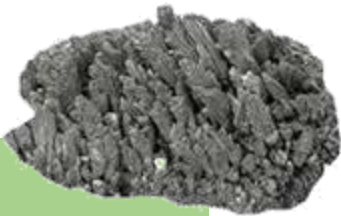
Ni ²⁸
Nickel



CU ²⁹
Copper



Li ³
Lithium



Mg ¹²
Magnesium



C ⁶
Graphite

Lithium-ion Battery Sourcing Models

By 2027, LFP battery scrap from electric vehicles is expected to constitute ~50% of the lithium-ion batteries market

Sourcing from Original Equipment Manufacturers (OEMs)

Pros

- Limited volume, but more can be made available, going forward
- Medium to long-term contracts- (pricing and volume)
- Provision of particular type of batteries; no requirement for additional segregation
- Lower cost of procurement with no involvement of intermediary stakeholders

Cons

- Tie-up with various OEMs to procure a diverse mix of batteries

Sourcing from Waste Aggregators

Pros

- High volume available

Cons

- Largely comprises kabbadiwalas or unregistered companies
- Formal tie-ups not possible
- Difficulty in sourcing due to tightening of regulations
- Mechanism needed for sorting and dismantling



Sourcing from Vehicle Manufacturers

Pros

- Currently in nascent stage, but huge volume can be made available in future
- Medium- to long-term contracts (pricing and volume)
- Mainly NFP batteries, thus no need for additional segregation

Cons

- Nascent market; will take 5-7 years for volumes to arrive



What's Next ?

Automotive Recycling



Automotive Recycling Regulations in India

Regulations are applicable for management and recycling of end-of-life (ELVs)

Hazardous Waste (Management and Handling) Rules

- Fluids such as waste oil, brake fluid, hydraulic fluid, power steering fluid and transmission fluid
- Hazardous solids such as air filter, oil filter and asbestos in clutch discs

E-waste (Management and Handling Rules)

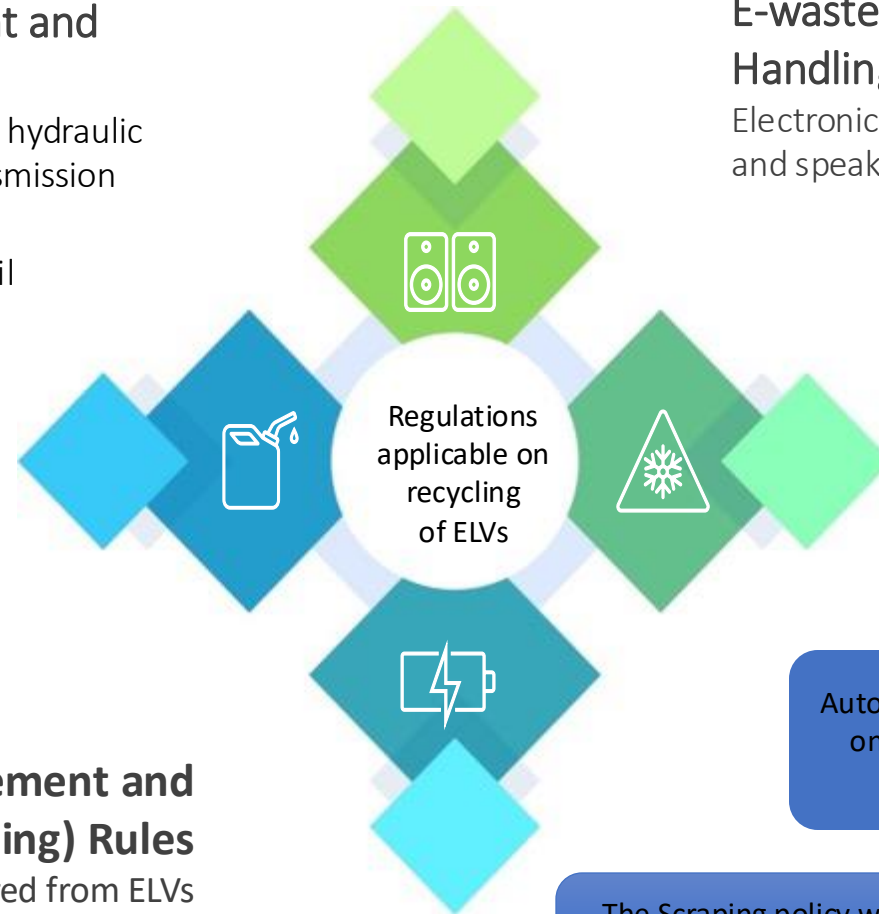
Electronic gadgets such as infotainment systems and speakers

Ozone Depleting Substances (Regulation and Control) Rules

Refrigerants containing ODS recovered from ELVs

Batteries (Management and Handling) Rules

Lead acid batteries recovered from ELVs



Automotive Industry Standard (AIS)- 129 offers guidelines on provisions for establishment of Registered Vehicle Scrapping Facility (RVSF) for scrapping of ELVs

The Scrapping policy will result in scrapping of government and commercial vehicles, and passenger vehicles older than 15 and 20 years, respectively

Formalization due to Government Regulations

Push for government's supportive policies will formalise and boost the automotive recycling industry

POLITICAL

- The government is supportive of new businesses and provides significant incentives
- There is a constant push to improve regulations and promote circular economy policies for the automotive recycling industry

ENVIRONMENTAL

- The scraping policy in India will reduce carbon emissions and pollutants
- Recycling ELVs promotes circular economies and helps recycle critical raw materials like steel, aluminium and plastic

ECONOMIC

- The Indian automotive recycling industry will bolster automotive sales and ancillary industries like steel and auto parts manufacturers
- It will generate greater raw materials for base and precious metals recycling industries

SOCIAL

- India has an abundance of labour, and this industry will create considerable employment opportunities
- Old vehicles will be replaced with new ones with greater safety and efficiency

LEGAL

- The Indian government has introduced scrappage policy and guidelines for ELV dismantling
- ELV owners will receive discounts, offers and tax rebates for scraping old vehicles and purchasing a new one

TECHNOLOGY

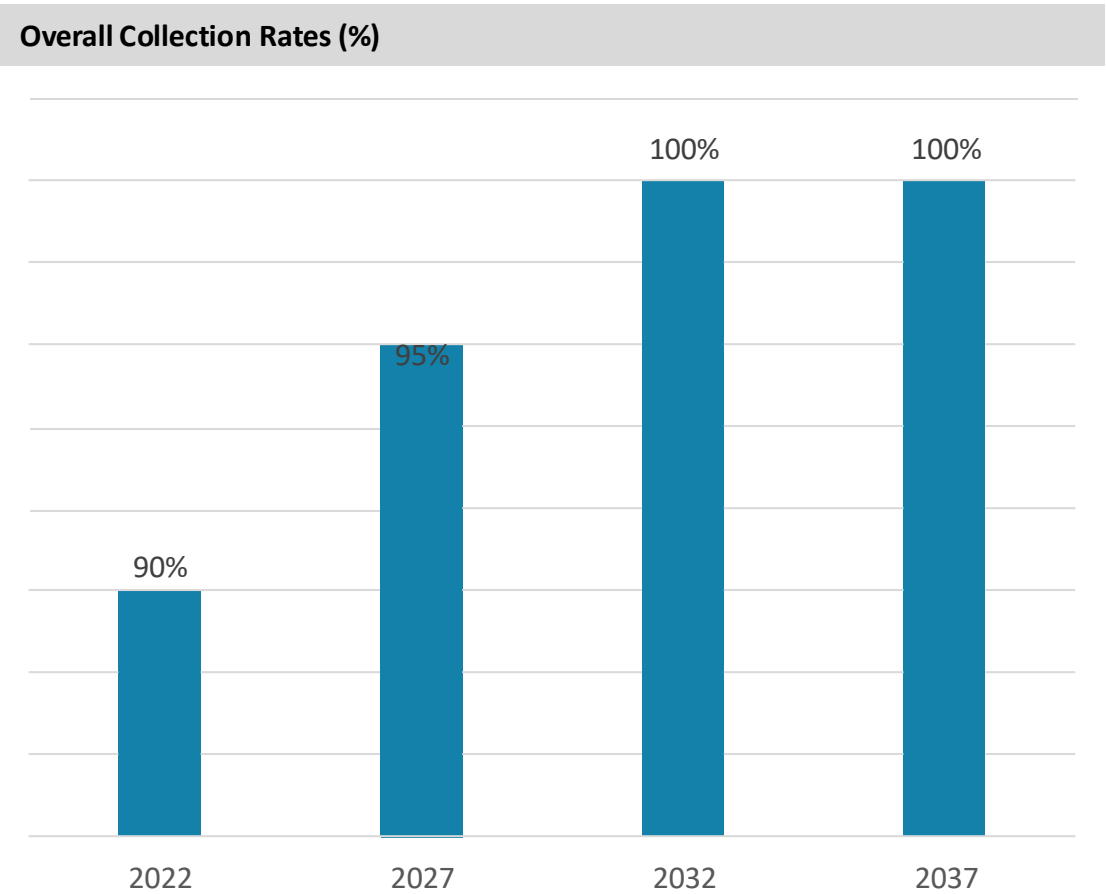
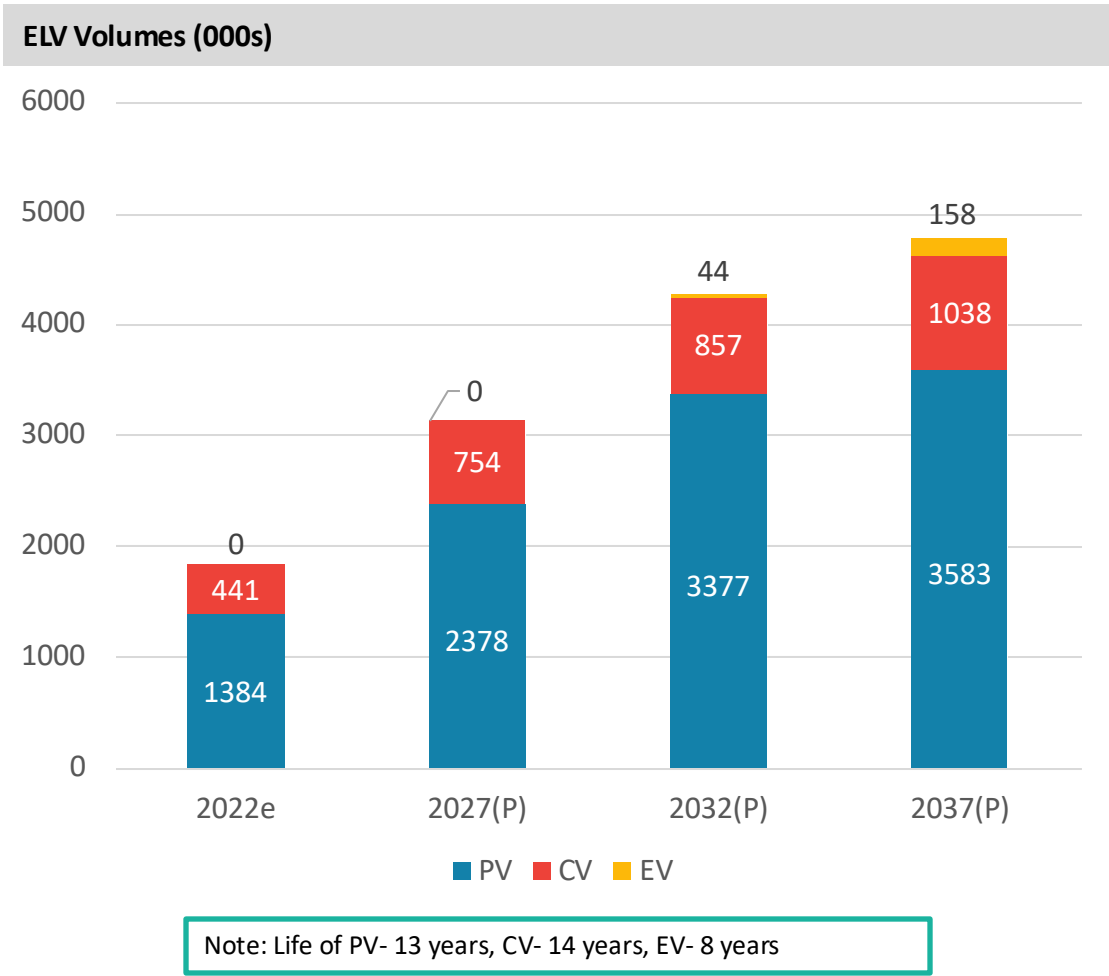
- India is adopting advanced and clean technologies for dismantling and recycling ELVs
- The dismantling process requires both machines and labour. Time and techniques used depend on type and size of ELV



Automotive Recycling Scrap (By Volumes)



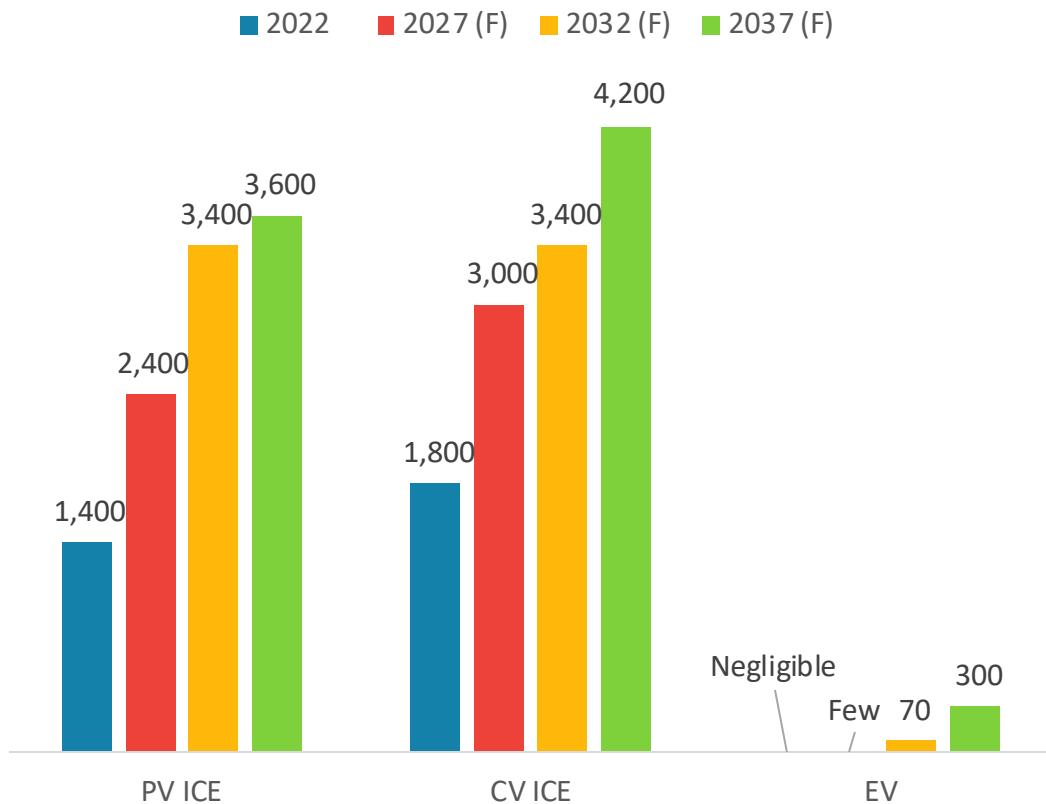
Volume of ELVs will increase from ~1.8 Mn in 2022 to ~4.8 Mn in 2037



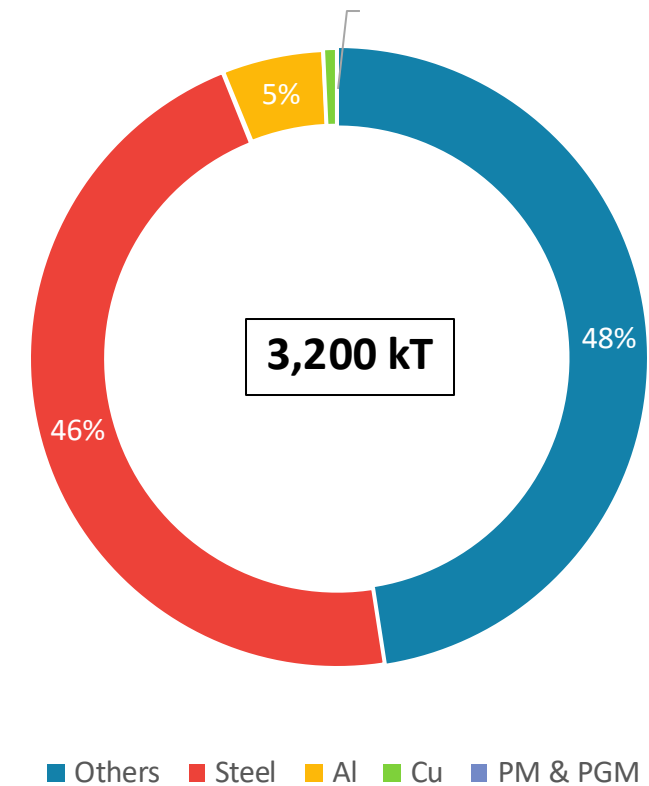
Automotive Recycling and Potential Material recovery – 2022

Overall automotive waste volume is expected to increase from 3,200 kT in 2022 to 8,100 kT in 2037

Automotive Recycling – (kT)



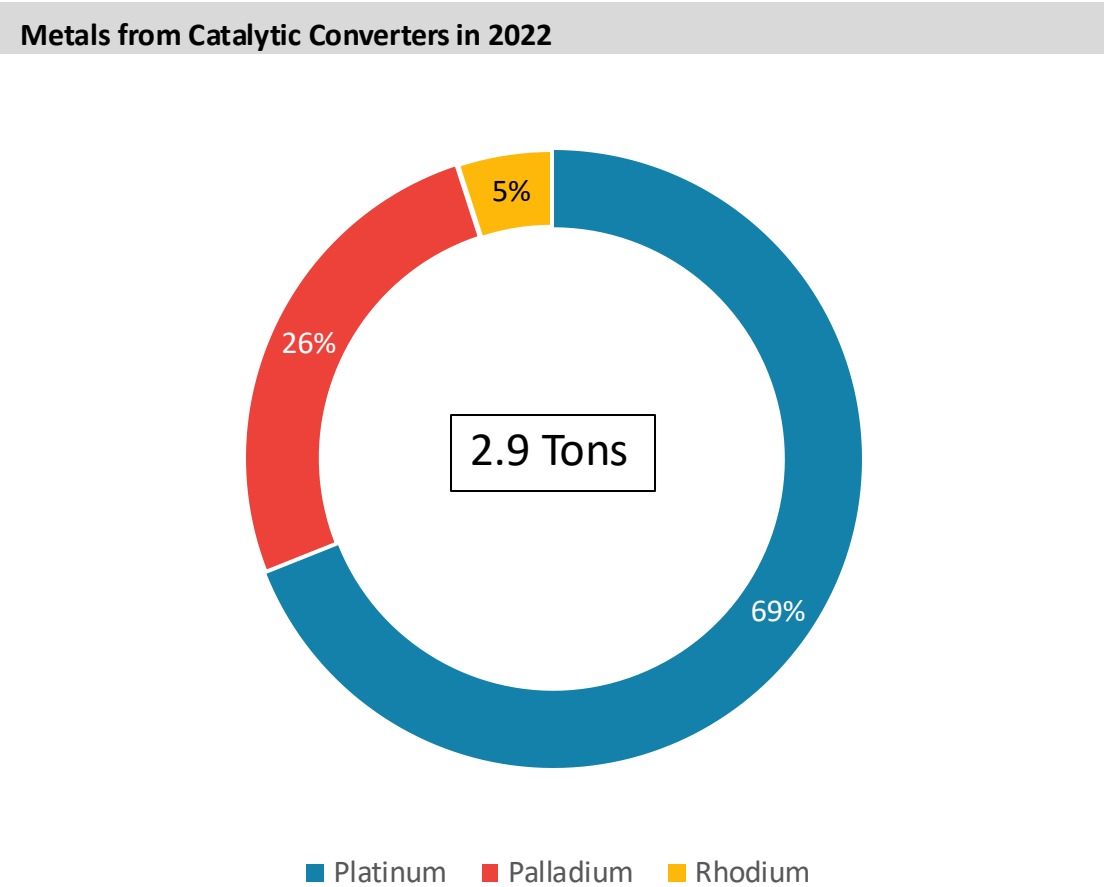
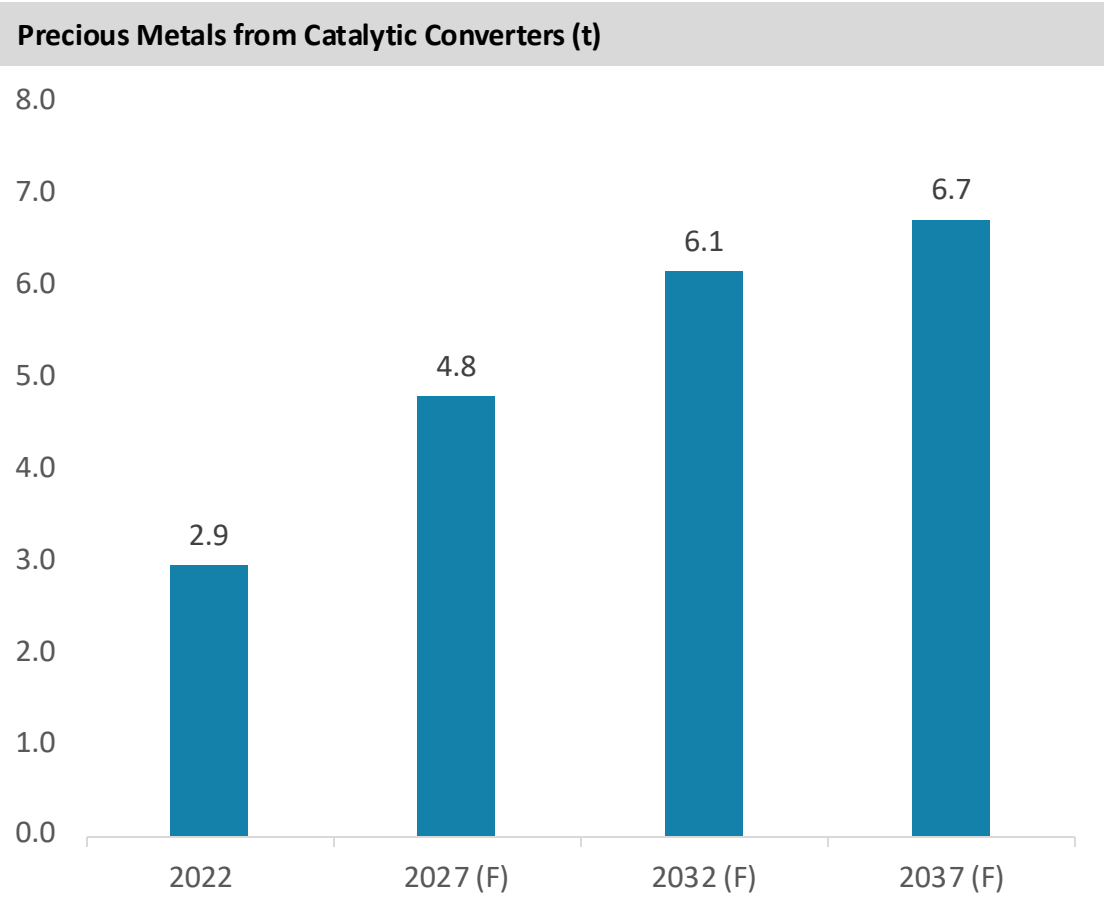
Potential material extraction from recycled scrap- 2022



Others : Plastic, rubber, textiles, glass, magnesium fluids and lubricants

Market Size - Catalytic Converters

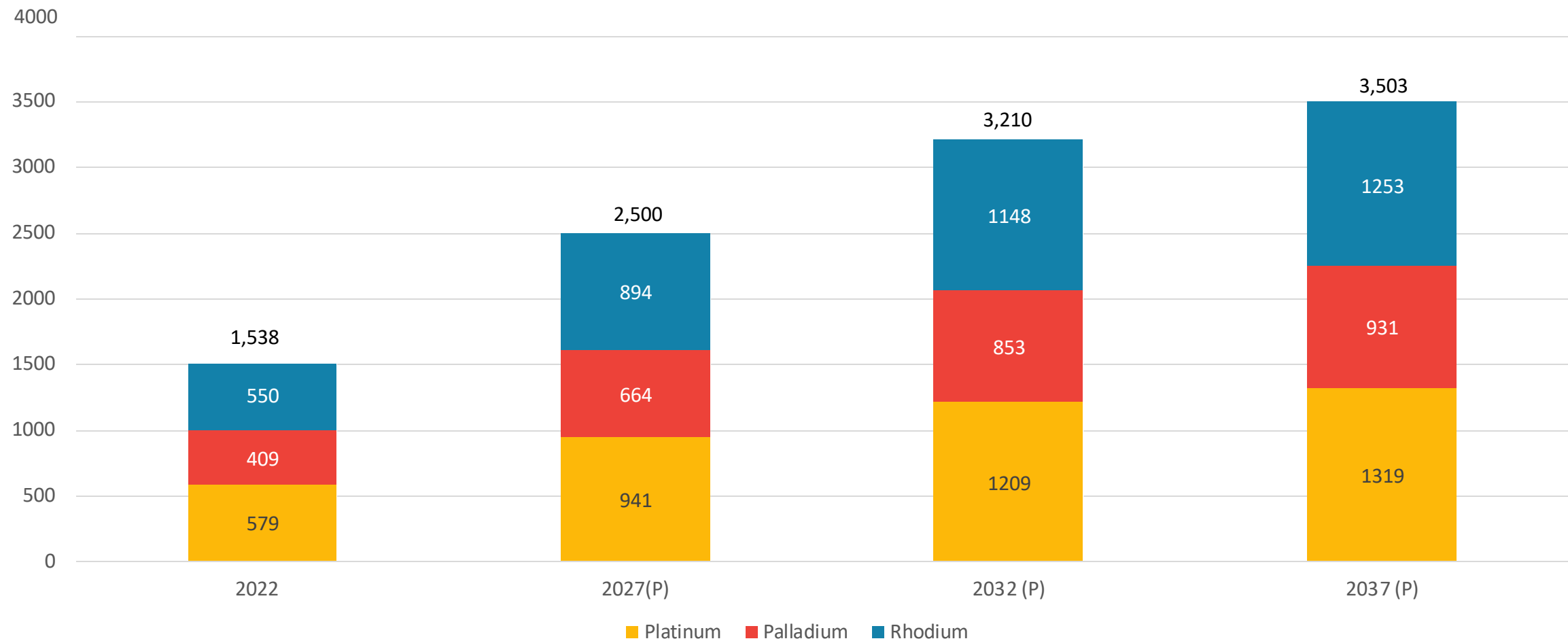
Overall precious metals waste volume is expected to increase from 2.9 Tons in 2022e to 6.7 Tons in 2037



Market Size in Value Catalytic Converters



Overall precious metals waste value is expected to increase from Rs 1,538 crores in 2022 to Rs 3,503 crores in 2037

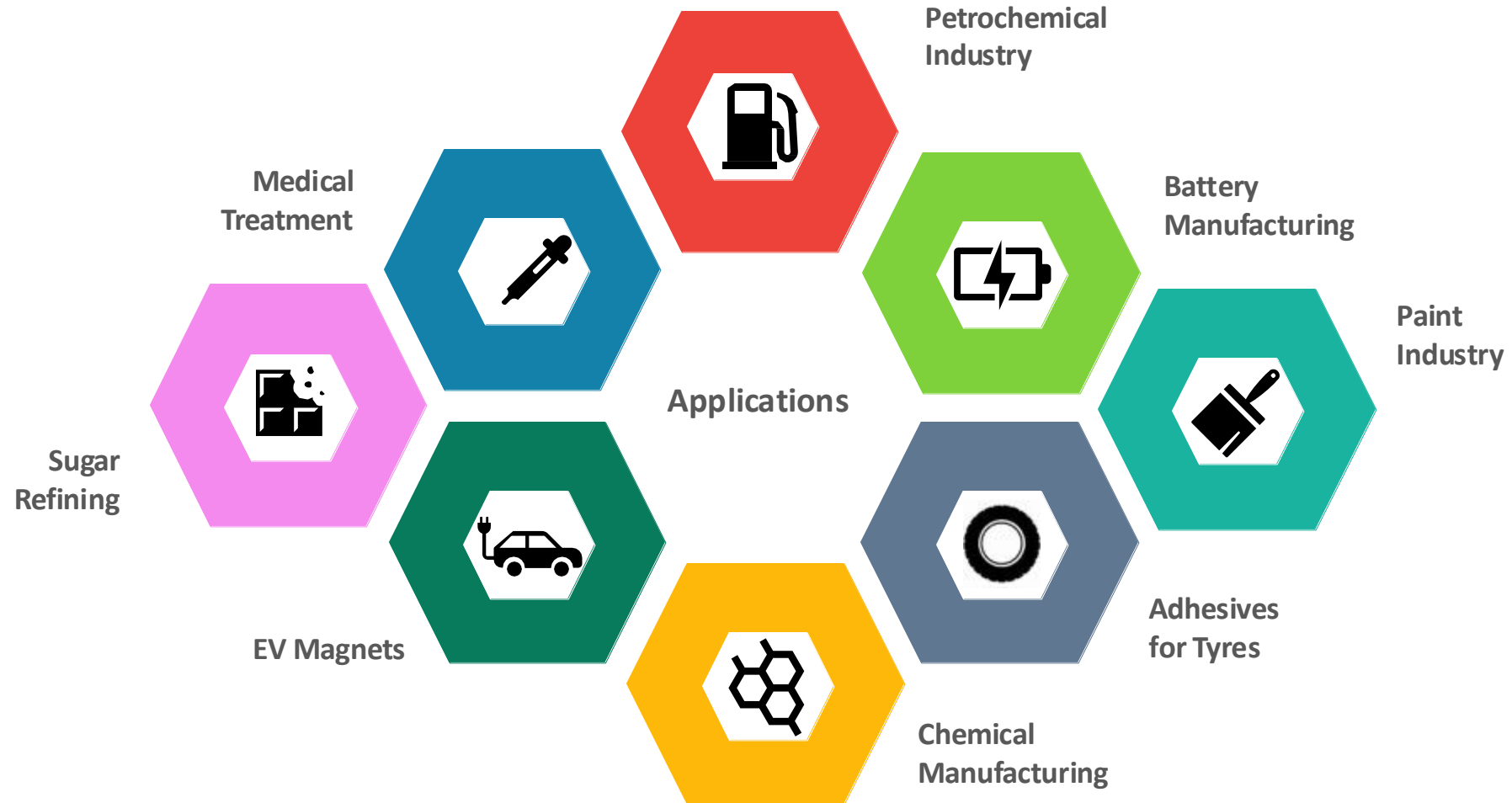




Industry Catalyst Recycling (Ni, Co)

Industry Catalyst Recycling (Ni, Co)

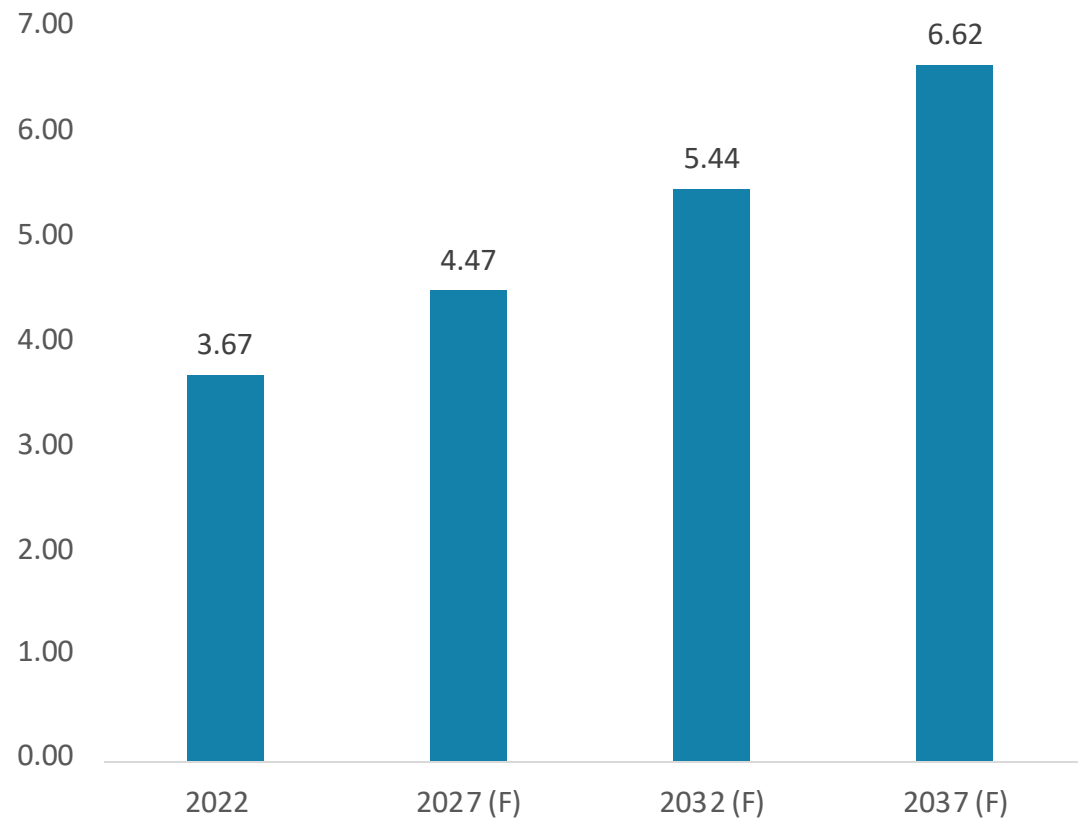
There is a tremendous rise in the demand for Nickel and Cobalt across various industries



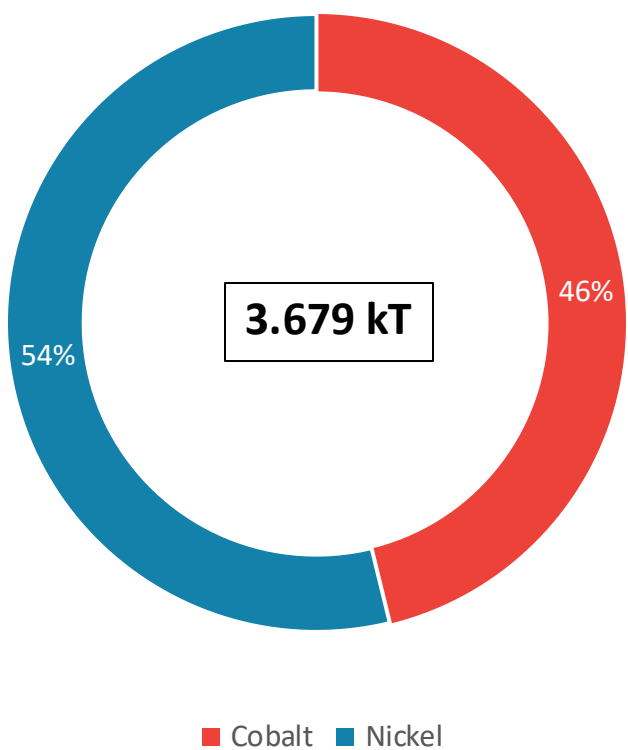
Ni and Co Industrial Catalyst and Potential Material recovery – 2022

The overall Ni and Co industrial catalyst waste volume is expected to increase from 3.67 kT in 2022 to 6.602 kT in 2037

Ni and Co Industrial Catalyst Recycling – (kT)



Potential material extraction from recycled scrap- 2022



Note: The split within Industry Catalyst for Cobalt and nickel has been estimated based on our interactions with Industry Experts

Formalization due to Government Regulations

Supportive policies and changing industry trend will boost the Recycling of Nickel and Cobalt based Industry Catalysts

POLITICAL

- The Indian government is supportive of new businesses and provides a lot of incentives for new businesses
- There is a constant push to improve regulations and promote circular economy policies supporting the Industry Catalyst Recycling Industry

ECONOMIC

- The Indian recycling industry will reduce dependence on imports to match the increasing demand
- With rapid growth in lithium-ion batteries, recycled cobalt and nickel will always be in demand

SOCIAL

- India has abundance of labor, and this industry will create a lot of employment opportunities

ENVIRONMENTAL

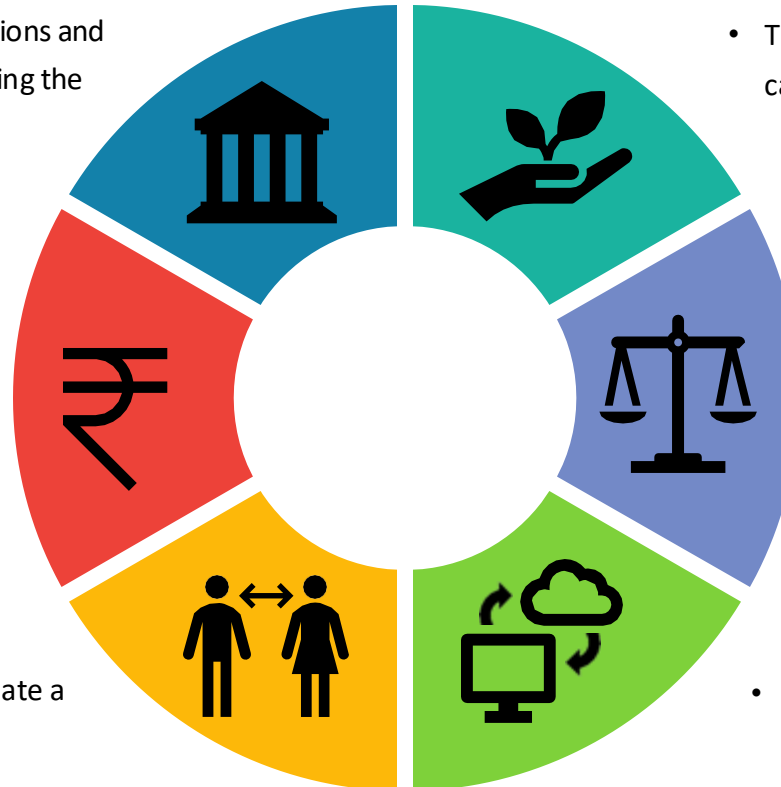
- Recycling spent catalysts will reduce mining which in turn reduces the pollution in India
- This promotes circular economy and reduced wastage caused in the process of production

LEGAL

- The Indian Hazardous waste management, handling and transboundary rules cover details of process, packaging, transporting and import-export norms comprehensively.

TECHNOLOGY

- India is developing and adopting advanced and clean technology for recycling spent industry catalysts





Gallery

Glimpses of our factory

Gallery



Gallery



Gallery



Our Clients



Client:
Tata Chemicals



Client:
Infosys



Client:
Cap Gemini



Client:
**National Stock
Exchange**



Client:
**Reserve Bank of
India**



Client:
Thyssenkrupp



Client:
Wipro



Client:
Godrej



Client:
Accenture

Our Clients



Client:
Ather Energy



Client:
Tata Motors



Client:
Hero MotoCorp



Client:
DHL Supply Chain



Client:
Tarkett Floorings



Client:
KPIT Technologies



Client:
Bharat Electronics Limited



Client:
ECIL



Client:
Genpact India