



綠化工程股份有限公司

Green Environment Engineering Incorporation

廢機動車 回收處理廠 | Waste Motor Vehicles Recycling and Disposal

- ✔ Align with policy of Net-Zero emissions in 2050
- ✔ Cooperating with Kaohsiung Net-Zero Institute in personnel training
- ✔ The first and only Corporation from Taiwan set up in Australia



Process of recycling end-of-life vehicles



Conclusion



Introduction



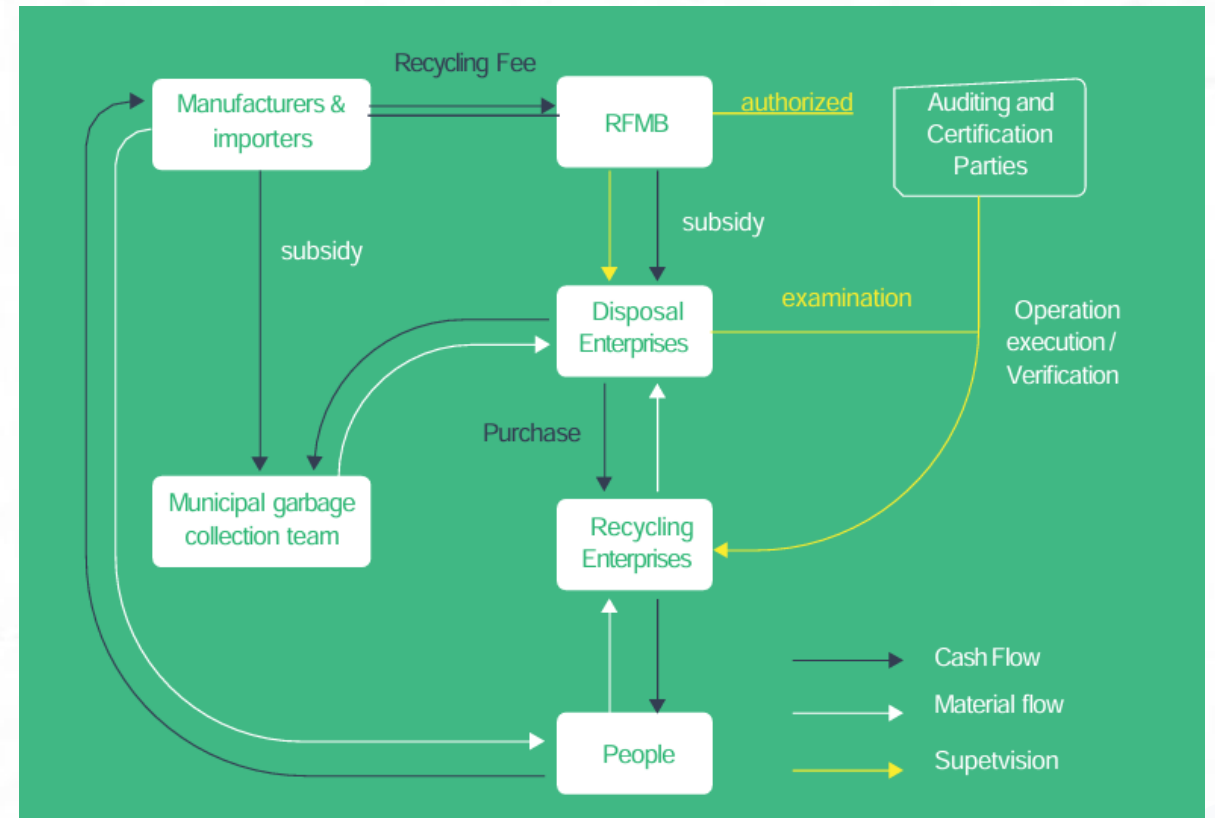
Plan for future



- In order to regulate resource recycling activities in Taiwan, the Resource Circulation Administration (RECA) of the Ministry of Environment established the Recycling Fund Management Board (RFMB) in 1998.

6 main services

- ✓ Handling the collection and disbursement of recycling fees
- ✓ Administration and consulting related to expenditure of recycling revenues
- ✓ Administration and consulting related to the recycling industry; establishing a verification scheme
- ✓ Subsidizing local governments for recycling
- ✓ Promoting resource recycling activities.



● 4-in-1 Recycling Program

Organize community-based voluntary recycling organizations. Promote garbage separation in households and communities recyclables.

Supervise the designated responsible entities in submitting the clean-up, treatment and recycling fees. Adopt subsidy and incentive mechanisms. Provide convenient recycling channels.

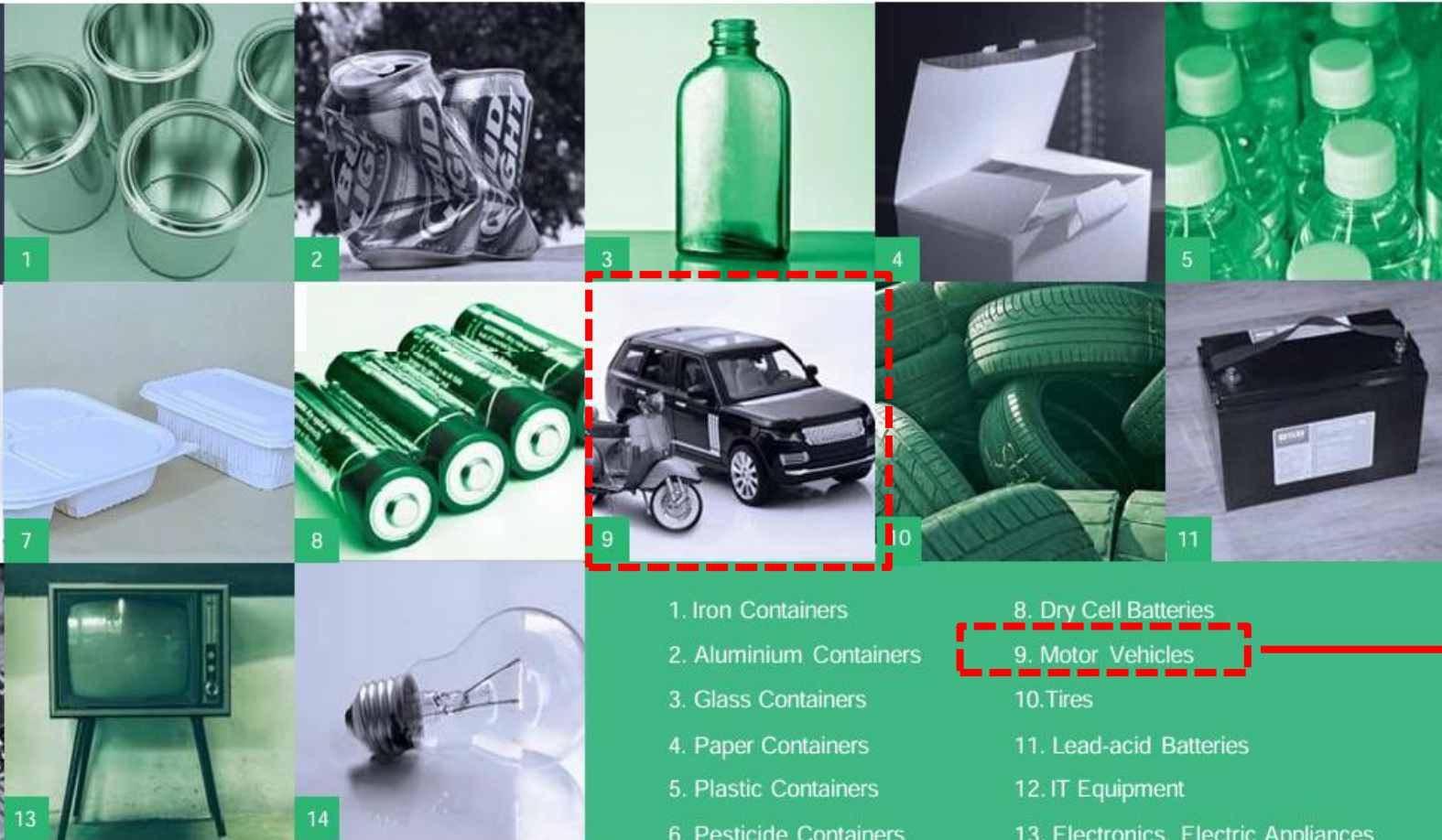


● Regulated Recycled Waste

14 major categories of waste are announced by RECA

Regulated Recycled Waste

14 major categories of the resources from waste are announced by RECA



- 1. Iron Containers
- 2. Aluminium Containers
- 3. Glass Containers
- 4. Paper Containers
- 5. Plastic Containers
- 6. Pesticide Containers
- 7. Plate Packaging Materials
- 8. Dry Cell Batteries
- 9. Motor Vehicles
- 10. Tires
- 11. Lead-acid Batteries
- 12. IT Equipment
- 13. Electronics, Electric Appliances
- 14. Lighting Sources

Key project to be introduced!



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Waste motor vehicle recycling



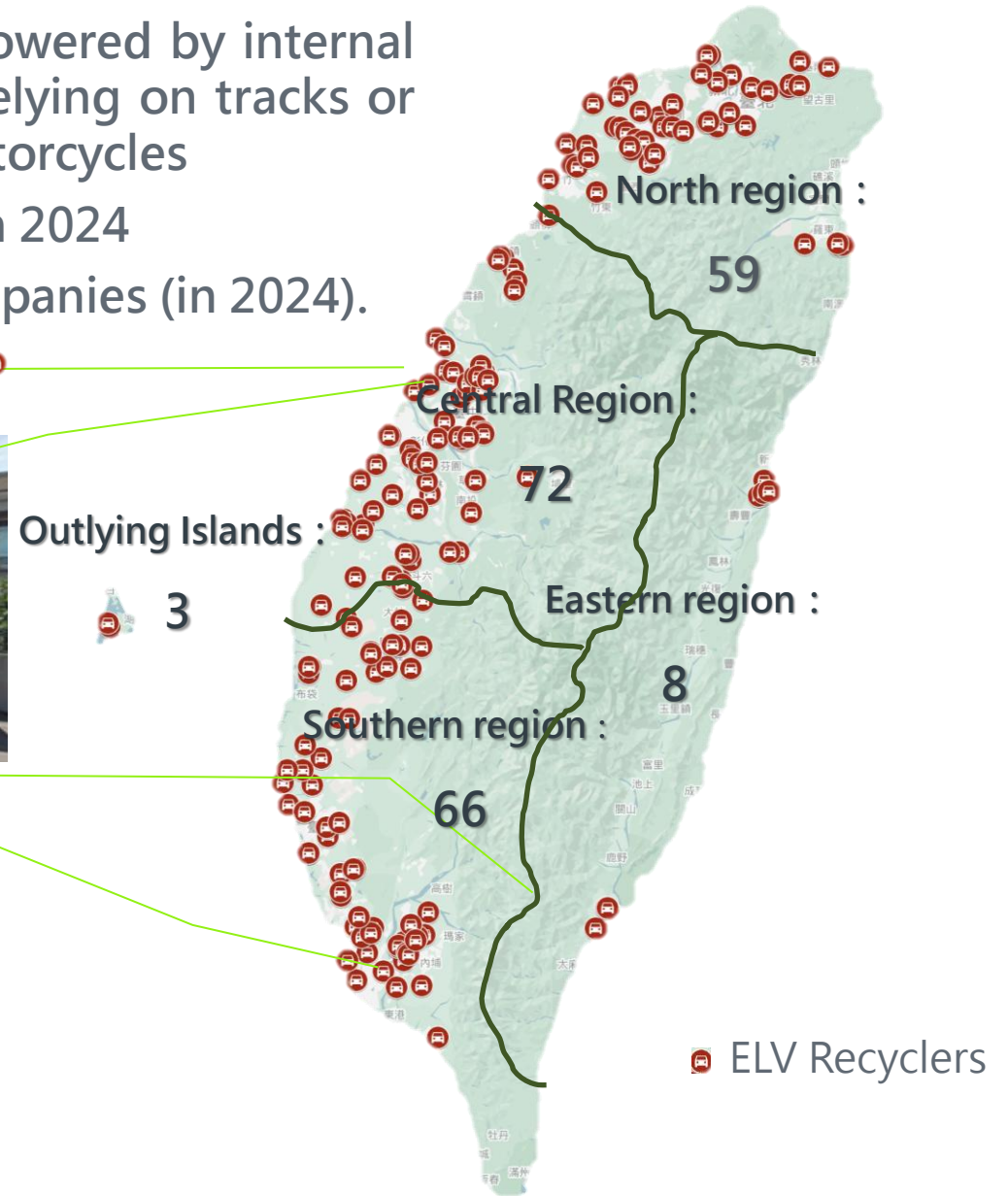
Background

- Rapid economic development in recent years
- High demand for replacing old motor vehicles
- Limited space and dense population
- Ministry of Environment domestic resource recovery operators in establishing a waste vehicle recycling system



Background >>>

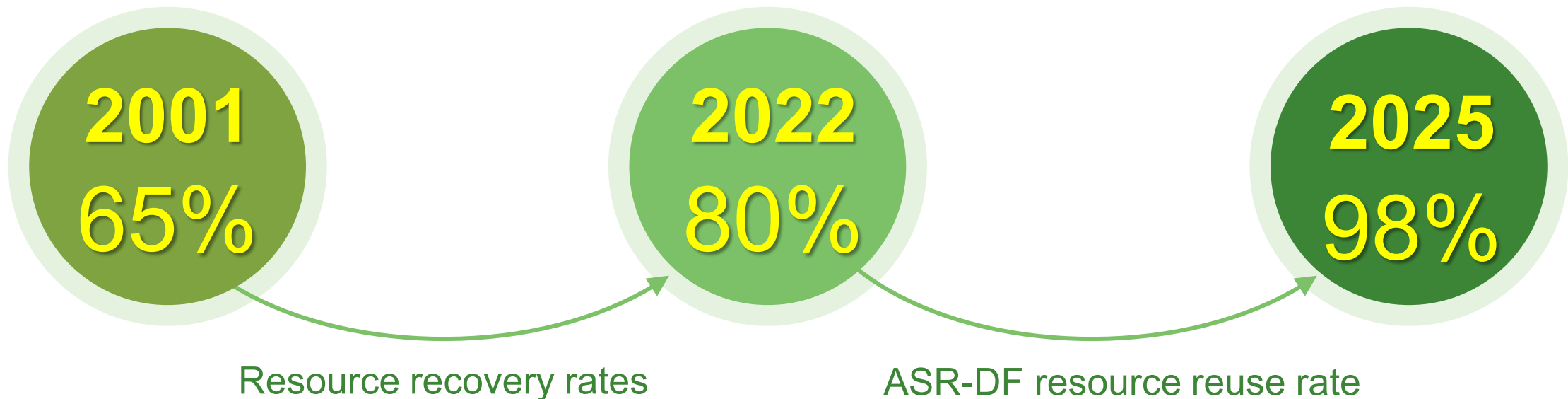
- Definition of " motor vehicle " : Refers to vehicles powered by internal combustion engines that operate on roads without relying on tracks or overhead electric lines, including automobiles and motorcycles
- Responsible enterprises: 1,366 companies registered in 2024
- Subsidized Entities: 207 recycling and 4 treatment companies (in 2024).



Resource sustainability Circular economy >>>

Principles

- Environmental protection, innovation, and sustainable management
- Support government environmental policies
- By equipment improvements, enhancing production technology
- Resource recovery rates increased from 65% in 2001 to 98% in 2025.





The crushing and sorting processing facility serves as the final treatment unit for waste motor vehicles.

Its primary functions include:



- 1 Concentrate waste treatment and reduce pollutants in the environment.
- 2 Through the crushing and processing process, waste metals, non-ferrous metals, plastics, glass, sand, and other waste materials can be efficiently sorted, improving the recycling and reuse rate and effectiveness.
- 3 After recycling and crushing treatment, most materials are converted into secondary raw materials for industrial use, thus enabling the development of a sustainable circular economy model.
- 4 Increases parking space and lowers social costs
- 5 Reduce air pollution from steel mills and enhances the quality of life.

Process of Vehicle dismantle >>>

Scrap Vehicle Recycling



Tire Dismantling



Battery Dismantling



Refrigerant and Oil Extraction



Engine Dismantling



Engine Certification



Vehicle Shell Disposal



Used Parts Trading



Waste Vehicles Dismantle >>>

- Approximately 360,000 cars and 560,000 motorcycles in 2024.
- Require professional and legal recyclers to handle the recovery process.

Waste Tires



Waste Lubricating Oil



Engine



Waste Lead-Acid Batteries



Refrigerants



Used Parts



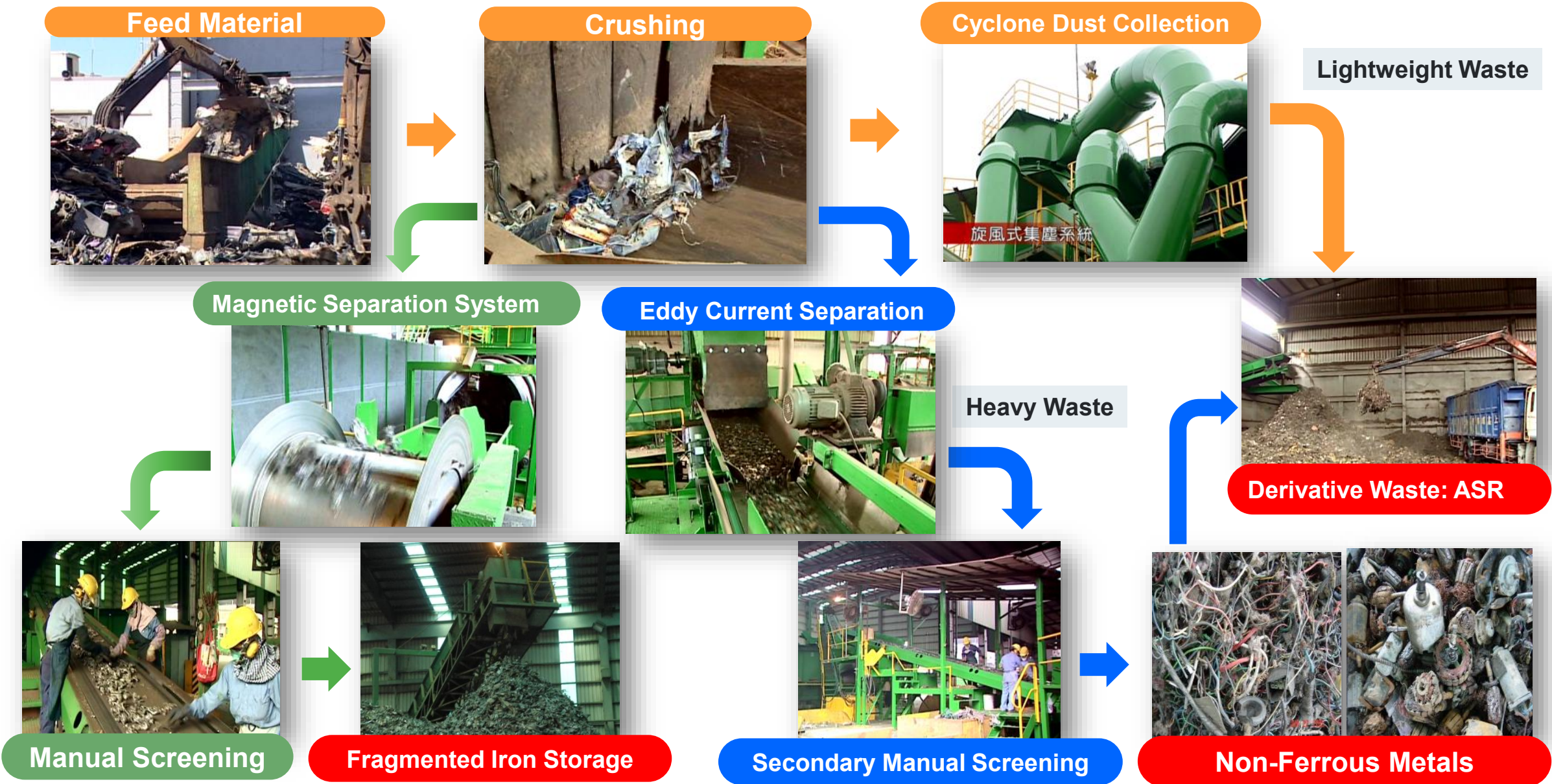


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Crushing and Classification

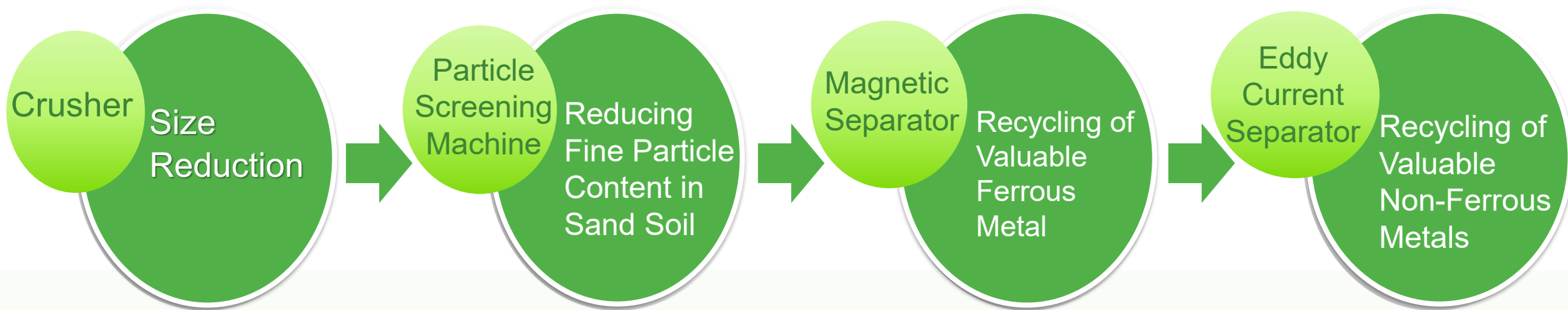


Crushing and Classification Process



Auto Shredder Residue Derived Fuel (ASR-DF) Reutilisation

- Follow the **Solid Recovered Fuel (SRF)** manufacturing technology guidelines and quality specifications
- Processing flow from **Auto Shredder Residue (ASR)** into **ASR-derived fuel (ASR-DF)**



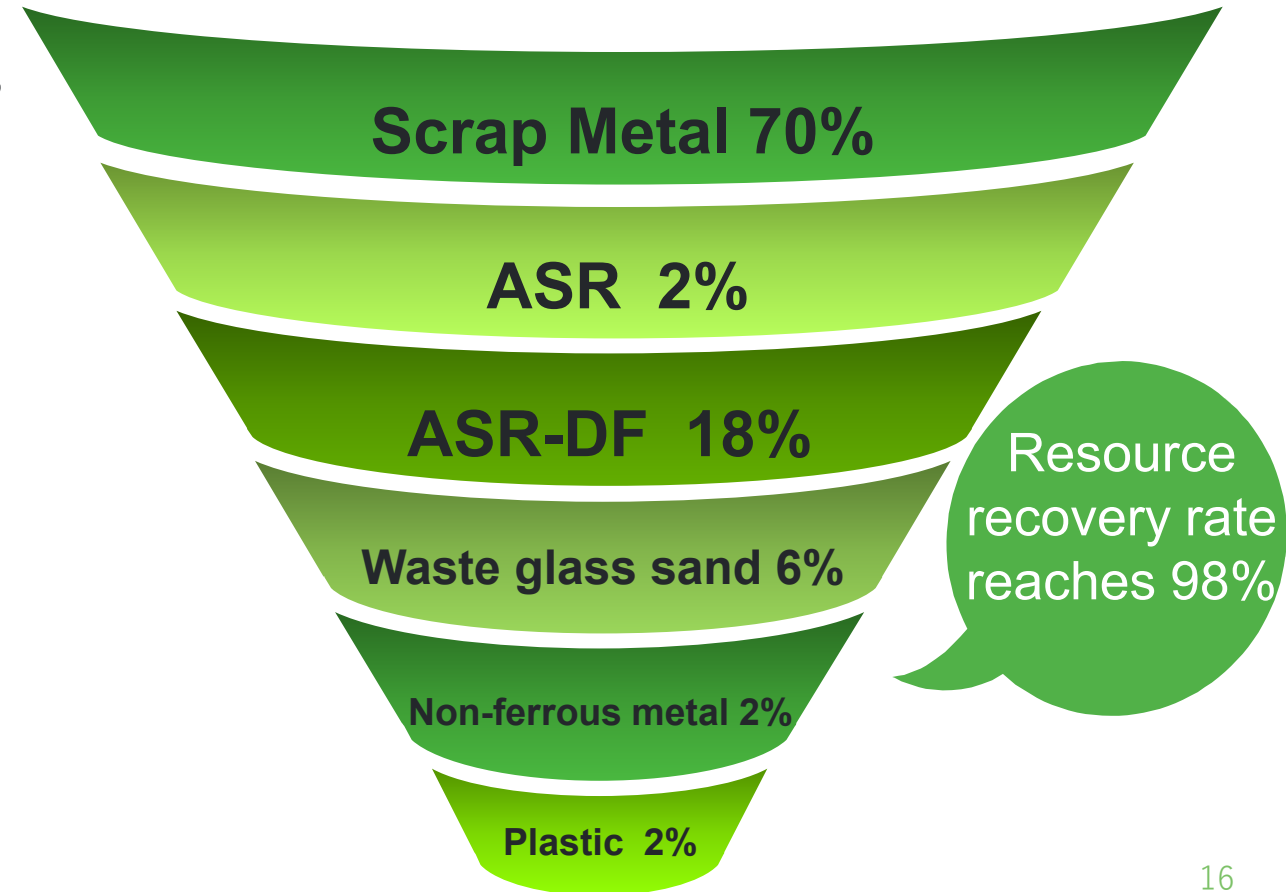
Process auto shredder residue by crushing and screening to remove fine particles like sand and soil. Then use magnetic and eddy current separators to recover metals, reducing non-burnable waste in the furnace. Additionally, a closed system helps control noise and dust, minimizing environmental impact.

Achieve the goal of 'waste-to-energy and zero waste' >>>

After crushing and sorting treatment, derived waste (Automobile shredder residue, ASR) will not enter general municipal waste incineration plants in 2 to 3 years. to achieve the goal of 'waste-to-energy and zero waste'.

Annually, an average of approximately 55,000 tons of scrap car bodies are processed, with the following percentages of output materials.

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Plan for future



- 1. Strengthen environmentally friendly vehicle design**
- 2. Monitor end-of-life vehicle recycling rates**
- 3. Establish safe vehicle dismantling procedures**

Key Initiative 1: Strengthen environmentally friendly vehicle design

● Strengthening Eco-Friendly Vehicle Design

Improve resource efficiency and eco-friendly throughout a vehicle's life cycle. Encourage voluntary adoption of eco-friendly design guidelines in short-term. And continue to increase the use of recycled plastic to **20%** (in new car), at least **15%** from ELV.

● Tracking Vehicle Plastics and Components

Collecting data on vehicle material usage, component disassembly, recycling feasibility, and pollution potential. To figure out a comprehensive understanding of vehicle materials to inform design and policy.

Key Initiative 2: Monitor end-of-life vehicle recycling rates

● Expand Recycler Reporting Items

Include high-value/strategic resources: catalytic converters, Li-batteries, rare earths, Cu, Fe...etc. Establish reporting & tracking system to monitor recovery, prevent loss/illegal handling.

● Build Recycling Channels

Partner with downstream recyclers & reuse industries, to establish recycling platforms for rare metals & recycled materials. And achieve ELV component & material goals in the future:

- ✓ Reuse & Recycling rate: 90%
- ✓ Reuse & Recovery rate: 99%

Key Initiative 3: Establish safe vehicle dismantling procedures

● EV Dismantling Guidelines

Set rules for recycler **qualifications, equipment, and site management**. Define safe procedures for Li-battery dismantling to reduce fire/electric risks.

● Enhance Recycling Capacity via Efficiency

Training to strengthen dismantling skills(on-site/online). Modernize facilities & strengthen safety ex. emergency response, material storage.

● Regulatory & Standards

Revise facility standards and audit manuals to cover EV & battery safety needs. Develop rules for lithium battery storage, transport, and reuse.



Ming Fu Group

銘福集團

以福為根，以松為葉，銘福實業，扎根全球

Thank you



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