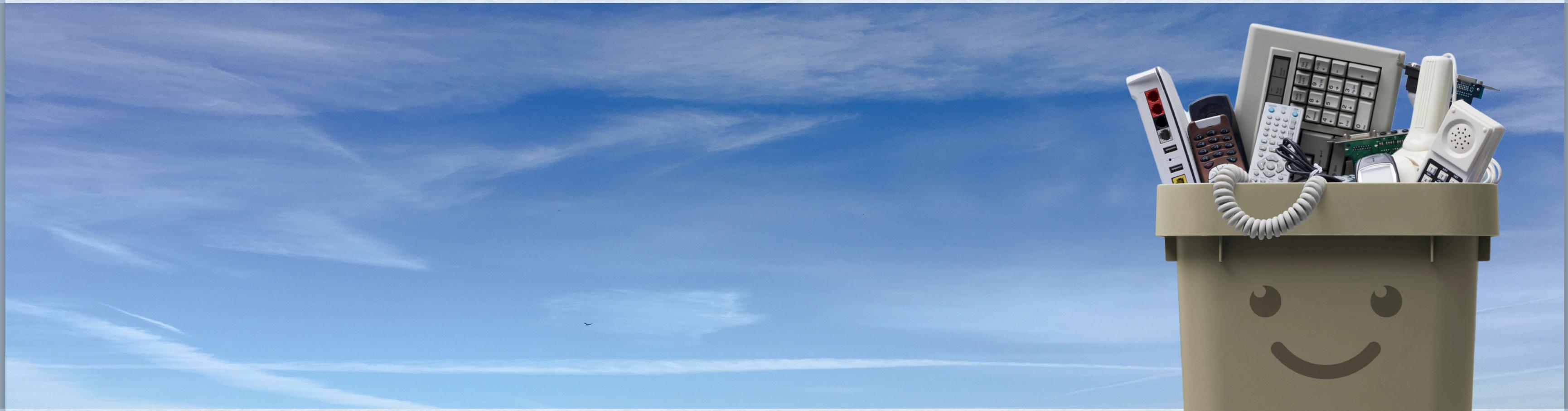


# E-Waste: A PROBLEM THAT IS BEING FORGOTTEN. A PROBLEM WE'VE ALL CONTRIBUTED TO

By Jia Wen Cheng



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# E-WASTE - WHY IS IT A PROBLEM?

- Electronic Waste (e-waste) consists of discarded electronic devices such as smartphones, laptops, televisions and other household appliances (Roy, 2023).
- 62 million tonnes of e-wastes were generated globally in 2022 (WHO, 2024) - equivalent to 6000+ eiffel towers!!
- 22.3% or less than 1/4 of the year's e-waste, are **properly** recycled (WHO, 2024).



## Impacts:

- Recyclable materials from phone wastes like gold, silver and bronze are being thrown away with the phones (Ruiz, 2021). Three small 3D-style icons representing precious metals: gold bars, silver bars, and bronze bars.
- Toxic chemicals from e-wastes such as lead are extremely harmful for human body (Newaz and Appolloni, 2024), especially women and children who are more frequently exposed to theses risks (Ankit et al., 2021). An illustration of a green glass bottle with a black cap. The bottle contains a green liquid with several small white skull and crossbones symbols floating in it, representing toxic chemicals.
- Can cause contamination to food chains, water and soils (Ankit et al., 2021)

# EVOLUTION OF LITERATURE ON E-WASTE

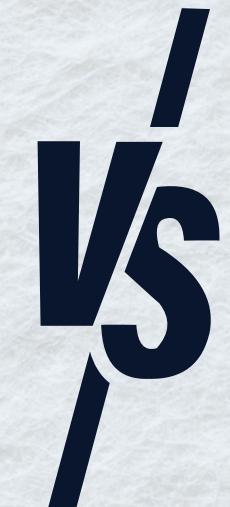
## Pre-2013

- Predominantly, WEEE research was technical, regulatory and environmental in nature.
- Researchers have closely examined reverse logistics, End-Of-Life (EOL) product handling, and supply chain in relation to e-waste.
- Solutions were based on how to reduce health and environmental impact during disposal.
- Regulatory and Policy based solutions were mainly proposed.
- (Newaz and Appolloni, 2024)



## Post 2013

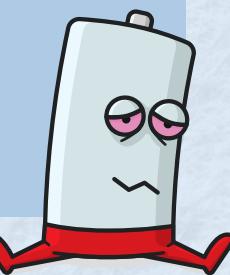
- WEEE's research focus shifted towards behavioural science, socio-economic dimensions and cultural & demographic influences.
- Areas such as consumer attitudes, subjective norms and income-based recycling motivation were looked at.
- Solutions are based on how to reduce the production of e-waste.
- Discussed remanufacturing & reuse and product life extensions as solutions
- (Newaz and Appolloni, 2024)



# BUSINESS PRACTICES THAT CONTRIBUTES TO E-WASTE

- Some businesses introduces **planned obsolescence**. This is a strategy where products are deliberately designed to have a limited lifespan (Ramdayal, 2023).

A common example is battery lives. Some smartphone batteries often degrade quickly and are designed to be non replaceable, meaning that if the battery is worn out, the whole device would have to be replaced (Vu, 2025), hence, contributing to e-waste.



- Many companies **restrict access** to tools, parts or manual, which left consumer with no choice but to replace the entire product (Ozturkcan, 2024).
- When companies stop providing software updates to a phone, the phone would be no longer compatible with new apps and less secure, meaning consumers may be forced to upgrade (Tech Web, 2025).
- According to a European Commission behavioural study in 2018, results shows that 64% of consumers always repair damaged product, however, the top reason for not carry out repair is due to the high cost of repair (Nikolina, 2019).



# BUSINESS CASE STUDY: APPLE

- The evolution of MacBook's Input/Output (I/O) ports has led to a significant amount of e-waste. For e.g. HDMI, USB-A ports were all removed in laptops produced between 2016-2020, meaning that the MagSafe 2 charger was no longer useful (Gould, Song and Zhu, 2024).



- Apple releases new models of iPhone on an annual basis with minor changes now, compared to the big upgrade back then (Mingis and Montgomery, 2024). Despite minor changes, consumers still buy newer models before the end of their current phone's lifespan which accelerated e-wastes (Ylä-Mella, Keiski and Pongrácz, 2022).

- Apple have stated that they no longer provide repair services to obsolete products (i.e. products that were for sale for more than 7 years ago). Furthermore, service providers are also not allowed to order parts for obsolete Apple products (Apple, no date).



# CONSUMER BEHAVIOUR AND PSYCHOLOGY

- **Perceived Product Obsolescence:** "The difference between the perceived value of a product owned and what is currently available on the market." (Guillard, Le Nagard and de Campos Ribeiro, 2023)

**Consumers believe that older models are outdated and no longer good enough, despite the fact that they still function perfectly. As a result, new device is bought, old device is wasted.**

- **Social Comparison Theory:** "People have an inherent pressure to assess themselves, regularly when it comes to others." (Ling, 2025)

**Purchasing decision are influenced by social comparison, leading consumers to upgrade their electronic devices to keep up with others.**



- **Lack of Awareness of E-Waste:** Many people are unaware of the impact of e-waste or the methods to correctly dispose them (Nisha et al., 2022).





# PROPOSED SOLUTIONS IN LITERATURE



- **Promote Circular Economy:** Encourage reuse, servicing, remanufacturing and recycling for end-of-life electronics (Herat and Agamuthu, 2012).
- **Licensing Schemes:** Issue licenses to unofficial recyclers to ensure ethical and safe practices (Herat and Agamuthu, 2012).
- **Extended Producer Responsibility (ERP):** A policy approach to ensure producers are both financially and physically responsible for end-of-life management of their product (Coalition (SPC), 2025).
- **Right to Repair Policies:** Implement right to repair policies to ensure consumers have access to the necessary information and tools to repair electronic devices (Ozturkcan, 2024).

# GAPS AND FUTURE RESEARCH DIRECTIONS



- While there are many existing and proposed solutions towards providing resources to support the **disposal** of e-waste, further research can look into how we **reduce** the production of e-waste.
- As discussed earlier on, **consumer culture** (such as consumerism) have major influences among the behaviours of other consumers. Perhaps further research can be done on how this influence can be redirected towards more sustainable consumption habits.
- Awareness of the negative impact of E-Waste should be promoted further.





**THANK YOU!**

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