

# Circular Economy strategies for small WEEE: Perspectives from Australia

UNCRD Special Session on 3R and Circular Economy  
in

13<sup>th</sup> International Conference on Sustainable Waste Management & Circular Economy and IPLA Global Forum  
2023, 28 November - 02 December 2023

Presented by

Gimhan Jayasiri <sup>a</sup>, Sunil Herat <sup>b</sup>, Prasad Kaparaju <sup>c</sup>

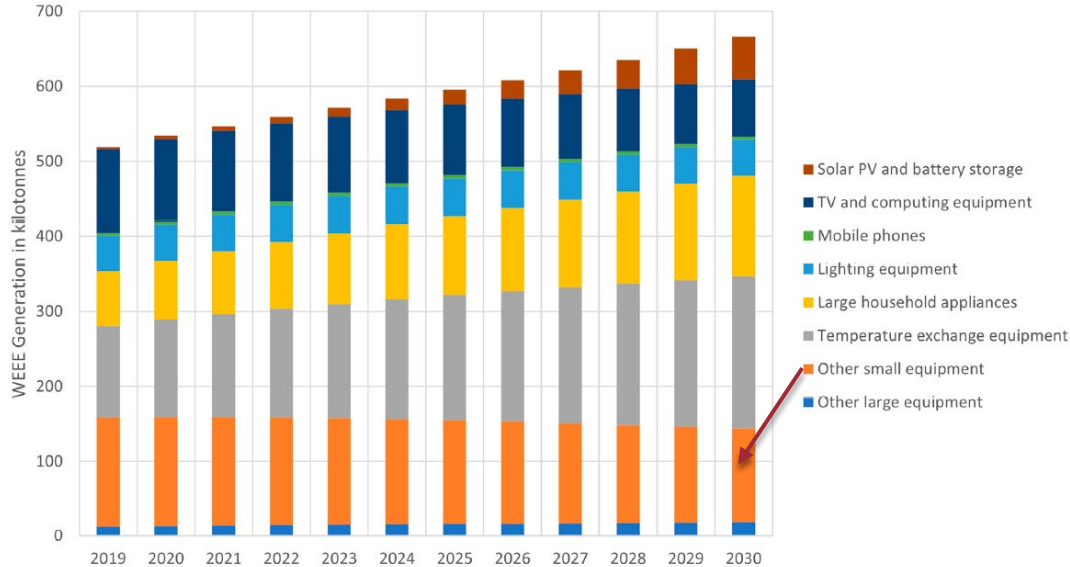
<sup>a</sup> PhD Candidate, School of Engineering and Built Environment, Griffith University, Brisbane, Australia

<sup>b</sup> Associate Professor in Waste Management and Circular Economy, School of Engineering and Built Environment, Griffith University, Brisbane, Australia

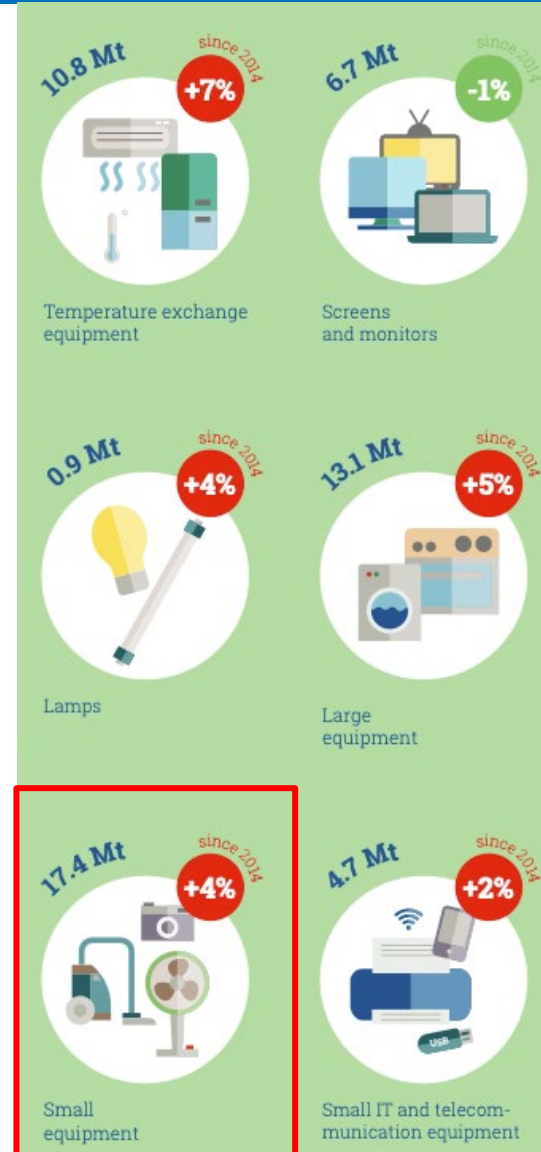
<sup>c</sup> Professor – Environmental Engineering – Renewable Energy, School of Engineering and Built Environment, Griffith University, Brisbane, Australia

# What is small WEEE?

- Small Waste Electrical and Electronic Equipment (small WEEE) is the most significant contributor in 2019 (Vanessa Forti et al., 2020).
- small WEEEs usually end up in the residual waste (Turner & Filella, 2017).
- Due to the wide range of products, short lifespan, and high frequency, the amount of small WEEE collected is very low (Wilkinson & Duffy, 2004).



Australian Scenario (Source: Jayasiri et al, 2023)



# What is small WEEE?

## EU WEEE Directive - 2018

- ❖ Large equipment
- ❖ Temperature exchange equipment
- ❖ **Small equipment**
- ❖ Small IT and telecommunication equipment
- ❖ Screens, Monitors and equipment containing screens having a surface greater than 100 cm<sup>2</sup>
- ❖ Lamps

## Australia - 2021

- ❖ Solar PV and battery storage
- ❖ TV and computing equipment
- ❖ Mobile phones
- ❖ Lighting equipment
- ❖ Large household appliances
- ❖ Temperature exchange equipment
- ❖ **Other small equipment**
- ❖ Other large equipment.

# What is small WEEE?

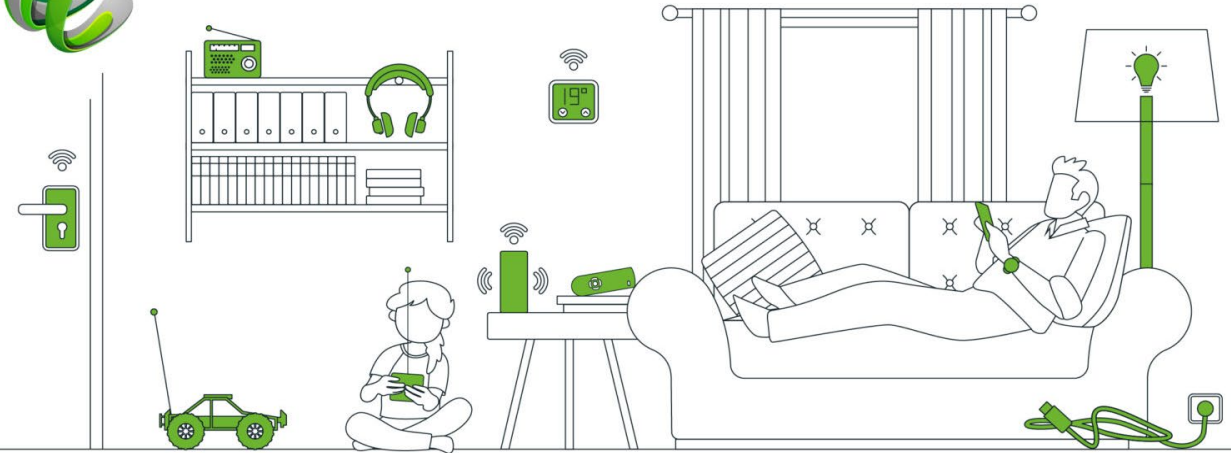
UNU Key	Description
0114	Microwaves
0201	Other small Household Equipment
0202	Equipment for Food Preparation
0203	Hot Water Preparation
0204	Vacuum Cleaners
0205	Personal Care Equipment
0401	Small Consumer electronic
0402	Portable audio and Video Devices
0403	Music Instruments, Radio and Hi - Fi
0404	Video Devices and Projectors
0405	Speakers
0406	Cameras
0601	Household Tools
0701	Toys
0702	Game Consoles
0801	Household Medical Equipment
0901	Household monitoring and control equipment



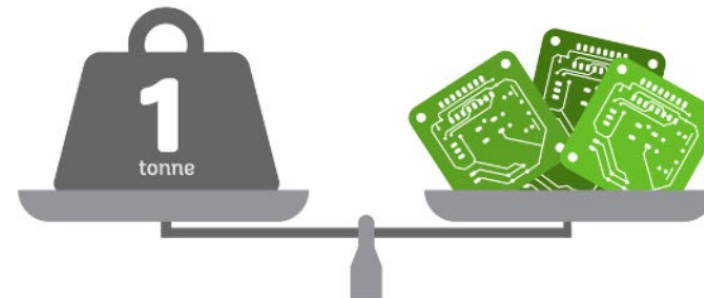
## International E-Waste Day

You can recycle anything with a plug, battery or cable!

14 OCTOBER 2023

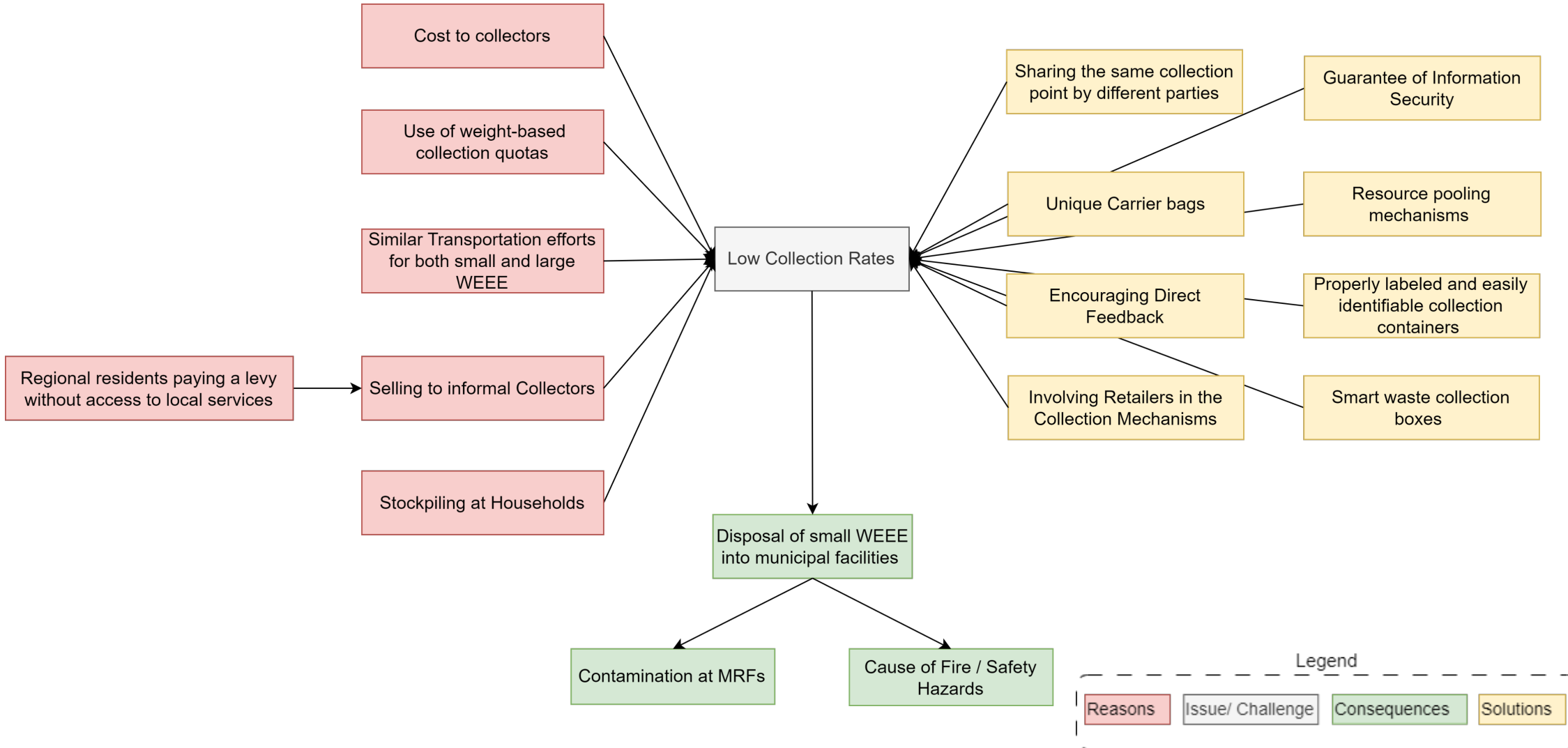


Printed circuit boards (PCBs) are found in many small electronic devices. One tonne of PCBs contains many useful materials including up to:



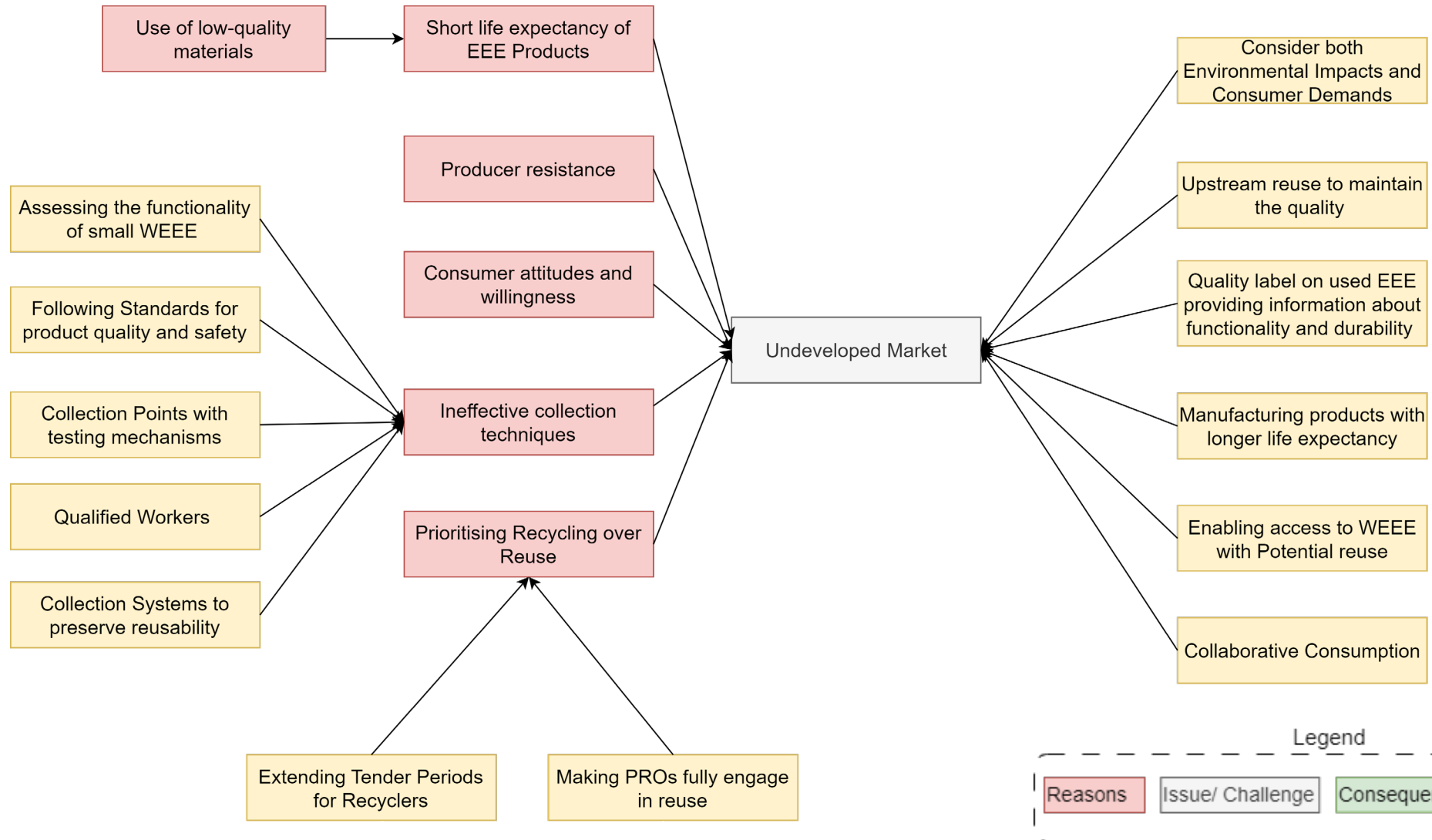
<sup>47</sup> <b>Ag</b> Silver	800g
<sup>79</sup> <b>Au</b> Gold	150g
<sup>46</sup> <b>Pd</b> Palladium	50g

# Circularity of small WEEE : Current Status



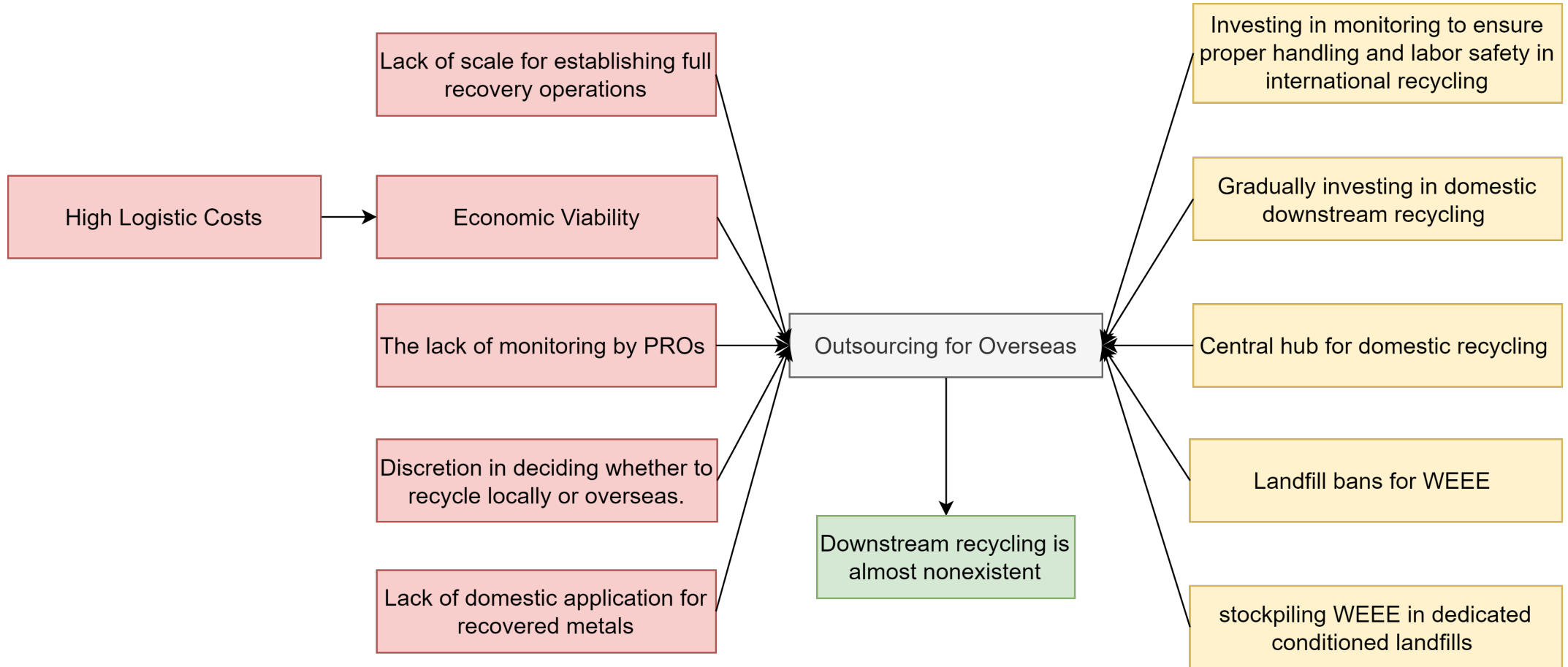
# Circularity of small WEEE : Current Status

Repair | Reuse



# Circularity of small WEEE : Current Status

Recycling



Legend

Reasons

Issue/ Challenge

Consequences

Solutions

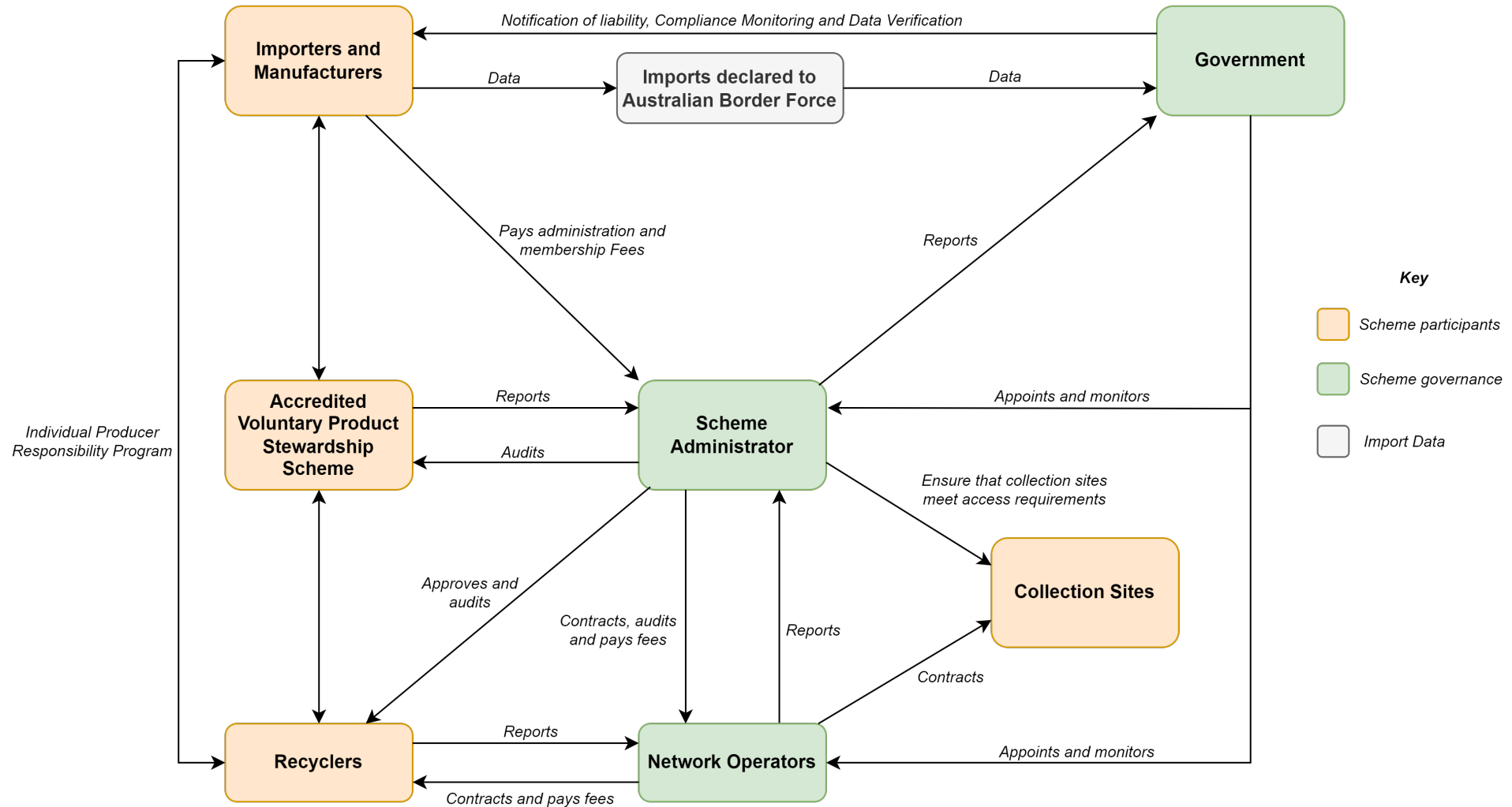
# Circularity of small WEEE : Progress in Australia

- The Department of Climate Change, Energy, the Environment and Water released a draft regulation for small electric products and solar photovoltaic system waste in 2022
- It is expected to cover the EEE, which is found in households and small businesses weighing up to 20 kg
- Proposed targets and obligations:
  1. Calculation of WEEE recycling rates;
  2. Information on the ratio of recovered materials for remanufacturing
  3. Implementation of accessible drop-off centres;
  4. Encouraging the maximisation of reuse of EEE;
  5. Carry out awareness campaigns for repair and reuse.





# Circularity of small WEEE : Progress in Australia



Proposed small WEEE Stewardship Scheme (Source: Jayasiri et al, 2023)

# Way forward for small WEEE in Australia

- Recycling and recovery targets should consider both the quality and quantity of recycled materials
- Introduce visible fees to encourage design for the environment
- Producers should also allow repair shops to use interoperable spare parts in their small EEE, reducing the cost of spare parts.
- Encourage customers' responsible consumption by providing circularity information at the point of sale
- Expand collection infrastructure, which may include supermarkets and retail shops as collection points
- Strict monitoring of downstream recycling by PROs