

The recovery potential of valuable elements in European WEEE 2005-2021



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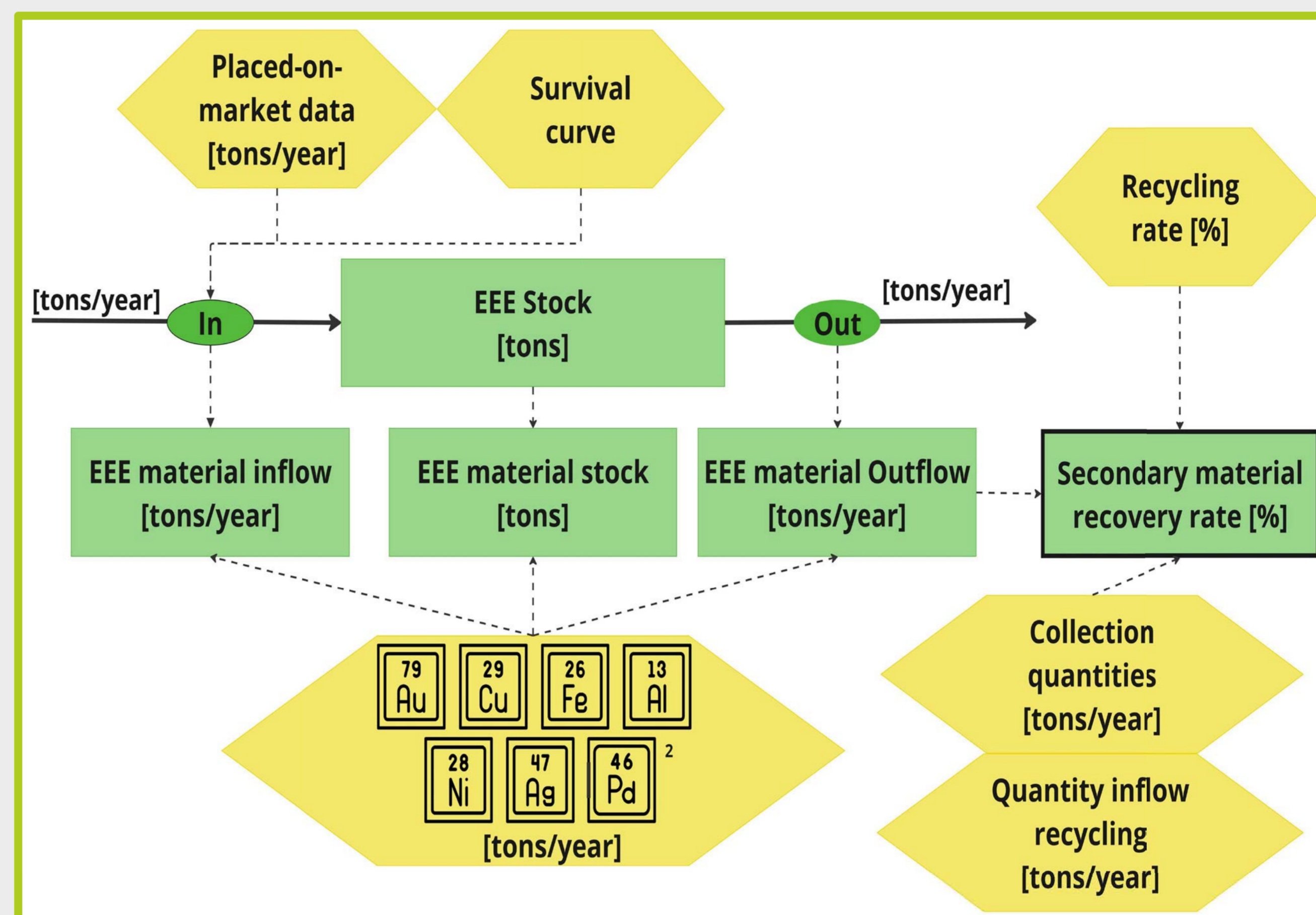


Contact

1 Introduction

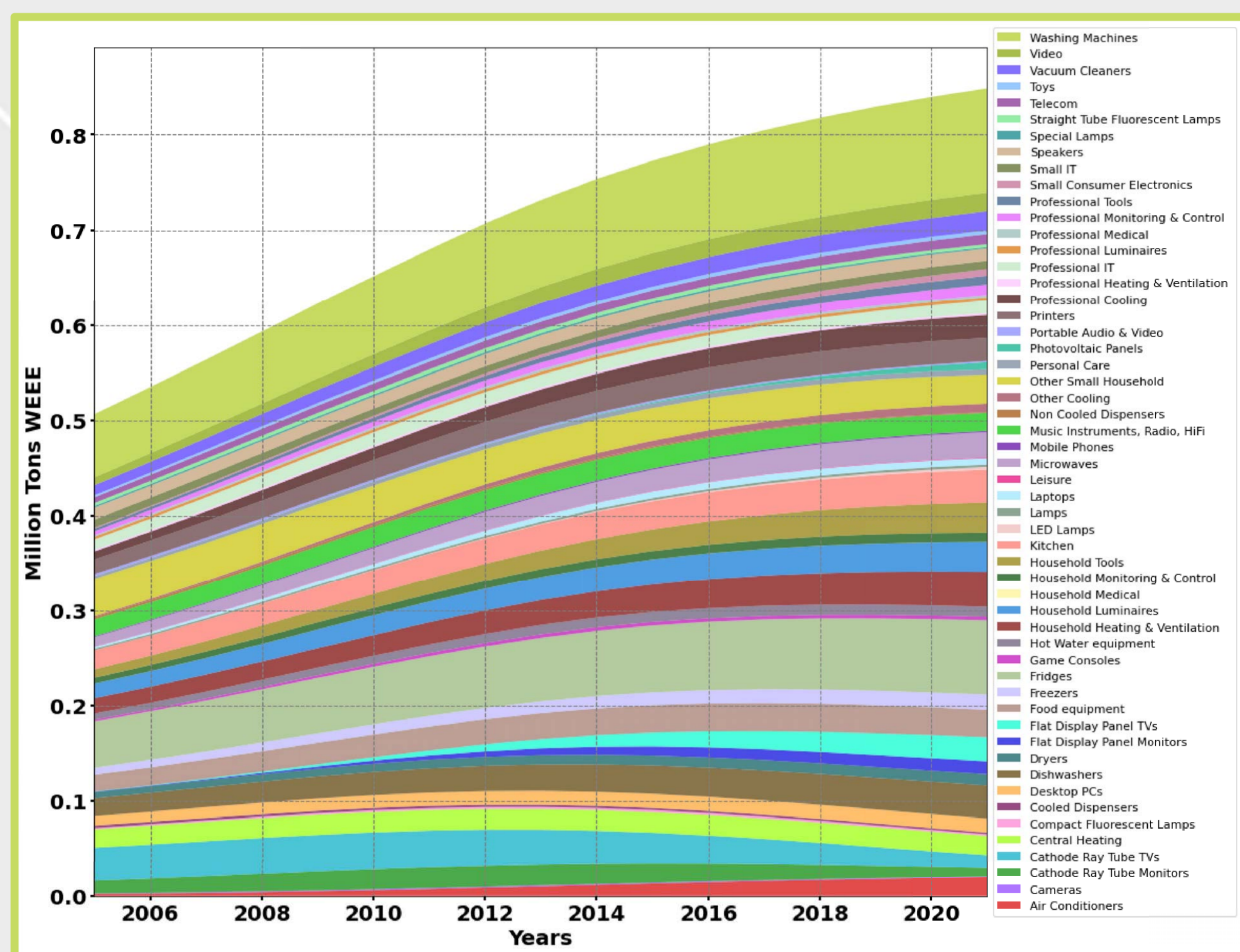
- We need to use **secondary raw materials** to enable a **circular economy** and **reduce** the **environmental impacts** of materials.
- Waste Electrical and Electronic Equipment (**WEEE**), one of the fastest-growing waste streams in Europe¹, could become a significant **source of secondary raw materials**.
- How much **material** do we currently **recover** from WEEE, and how can we **increase** the **recovery** of secondary raw materials?

2 Fraction of WEEE collected

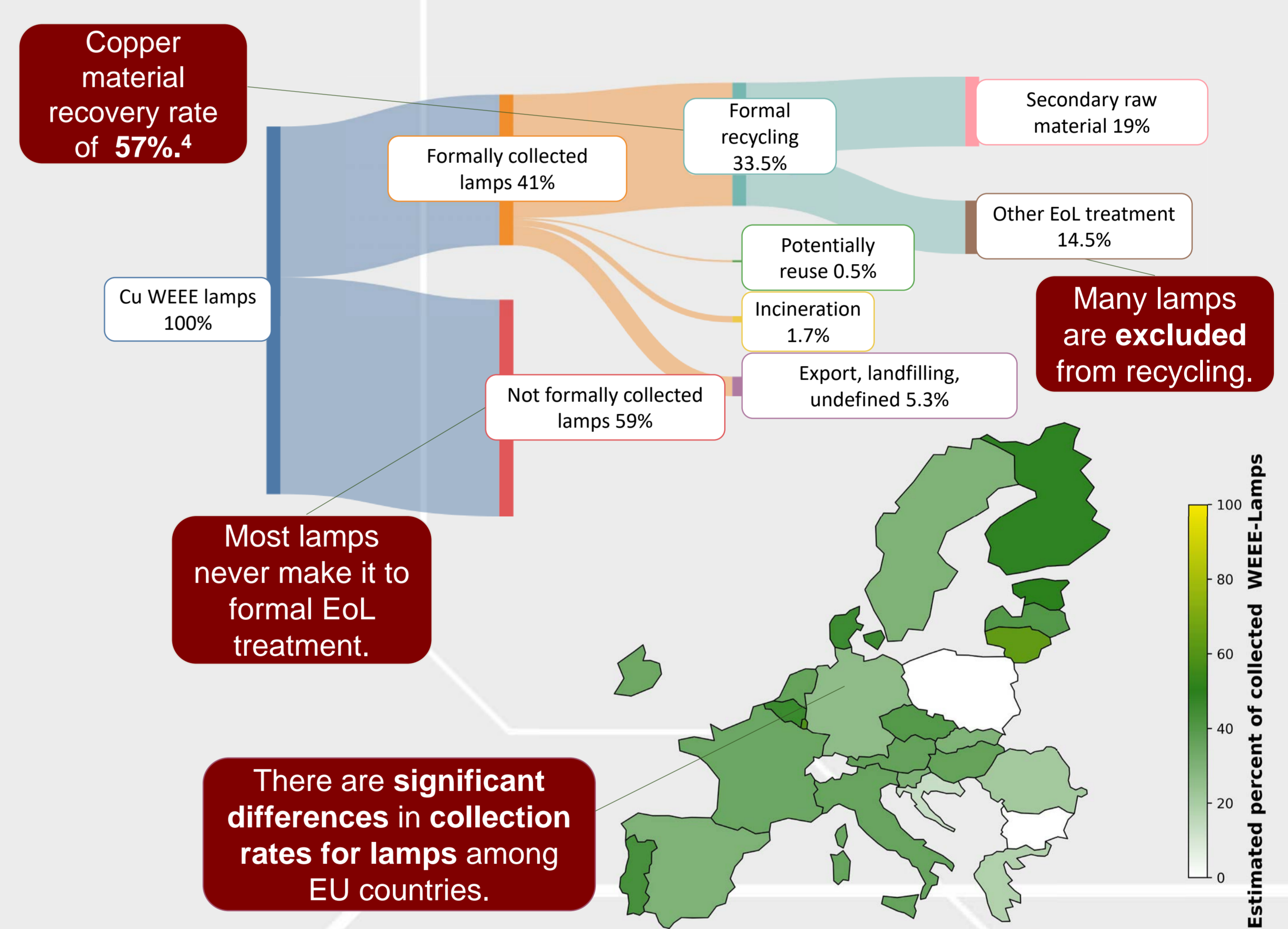


- Dynamic inflow-driven **material flow analysis**.
- Temporal **changes**, in **material composition** to account for **technological advancements**.
- 900 products grouped into 54 categories using the UNU-key classification [3].

3 Generated WEEE in Europe



4 Example: Material recovery of Cu in lamps



5 WEEE recovery rates for elements

Material	Total estimated recovery rate from WEEE in EU-27
Copper	~23%
Iron	~44%
Aluminium	~28%
Nickel	~43%
Silver	~6%
Gold	~12%
Palladium	~11%

6 Conclusion and next steps

- Most elements in WEEE are **not recovered** or only **partially recovered** and are therefore largely unavailable for secondary raw material supply.
- Significant differences in estimated collection rates (collected quantity compared to estimated outflow) explain the low element recovery in WEEE:
 - Low**: Lamps (36%), Small equipment (33%)
 - Medium**: Small IT (47%), Cooling and freezing equipment (55%)
 - Higher**: Large equipment (63%), Screens (77%)
- Low recovery rates** for materials are related to **costs** of separating **low concentrated** streams or due to price competition with primary raw materials.
- The model is **highly sensitive** to lifetime estimates, material composition values and recovery values (The latter is extremely price dependent).

Bibliography



Universiteit
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