Integrating the informal recycling sector into the discarded LCD/LED screens management in Santiago de Chile

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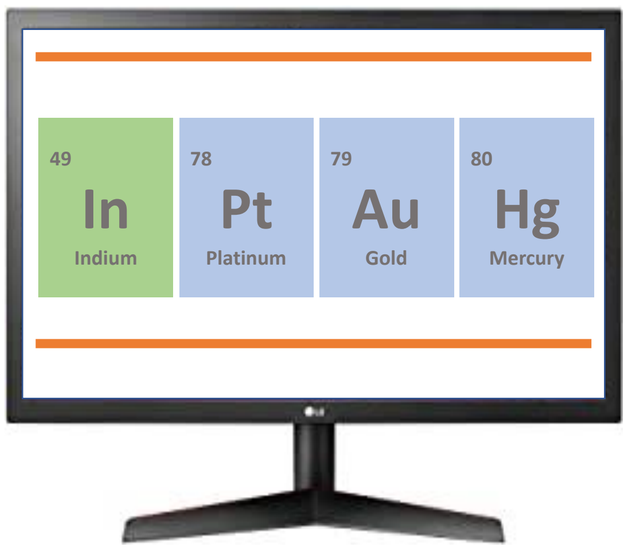
Research objective:

Review and identify electronic waste management configurations with explicit consideration of the informal sector and assess their environmental and social performance

Background

- **Informal recyclers** are men and women who collect waste on the streets or waste facilities to sell them to recycling companies as a way of generating income.
- There are between 12 - 56 million informal recyclers concentrated mostly in Latin America, Asia and North Africa, who are responsible for up to **90% of recycling rates**[1]**.**
- Due to the lack of security and proper equipment, they are exposed to **hazardous substances and physical injuries**[2].
- Even though their work is not recognized by the authorities, they have **knowledge and experience** regarding waste collection and management[3].



- **Liquid-crystal display (LCD) and light-emitting diode (LED)** screens represent 15% of electronic waste (e-waste) in Santiago de Chile[4].
- They contain **critical elements and precious metals** with a high recycling market value[5].
- LCD/LED screens present a **high repairability potential.**
- If treated incorrectly, LCD/LED screens can release **toxic elements such as mercury**
- There **is scarce information** about how the informal recycling sector is treating LCD/LED screens in South America, including Chile.

Research question:

How can the informal recycling sector be integrated to improve the sustainability of LCD/LED screens in Santiago de Chile?

Research methods

Field research
Participant observations and semi-structured interviews will be conducted with formal and informal e-waste management actors in Santiago de Chile to identify how the informal sector is managing discarded LCD/LED screens.

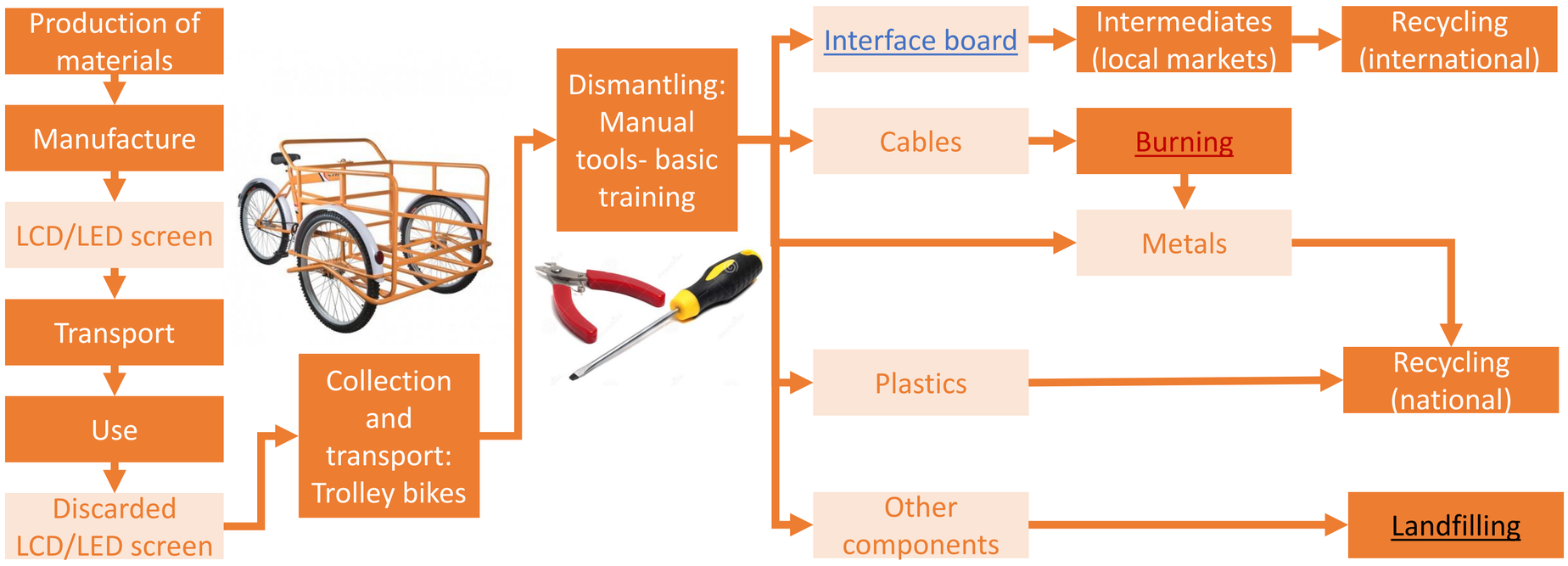
Scenario analysis
Representation of current and exploratory configurations for the management of discarded LCD/LED screens.

Environmental and social life cycle assessment
Evaluation of the scenarios in SimaPro to identify critical steps and compare the configurations based on environmental and social indicators.

Environmental indicators:
- **Global warming potential**
- **Human toxicity potential**

Social indicators:
- **Income**
- **Working hours**
- **Health and safety standards**
- **Social security and health**
- **Vacations**

Expected results: current informal management of discarded LCD/LED screens



Conclusions:

- Informal recyclers in Santiago de Chile are exposed to toxic substances when treating and burning components of discarded LCD/LED screens.
- Currently, tools and training for dismantling only allow obtaining interface boards. Most of the other components are being disposed of in landfills.

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