

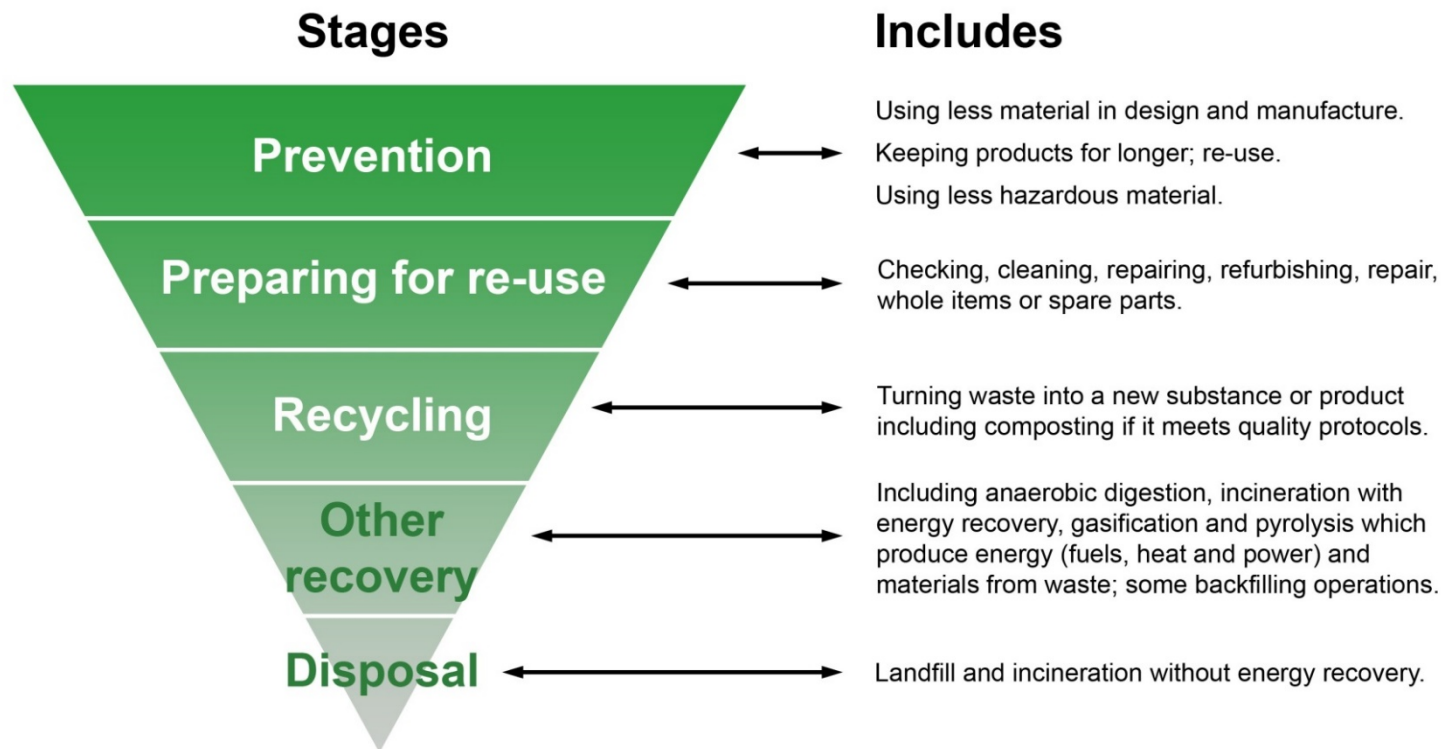
# **The role of recycling companies in the circular economy**

## ***Opportunities and challenges towards a materials management transformation***

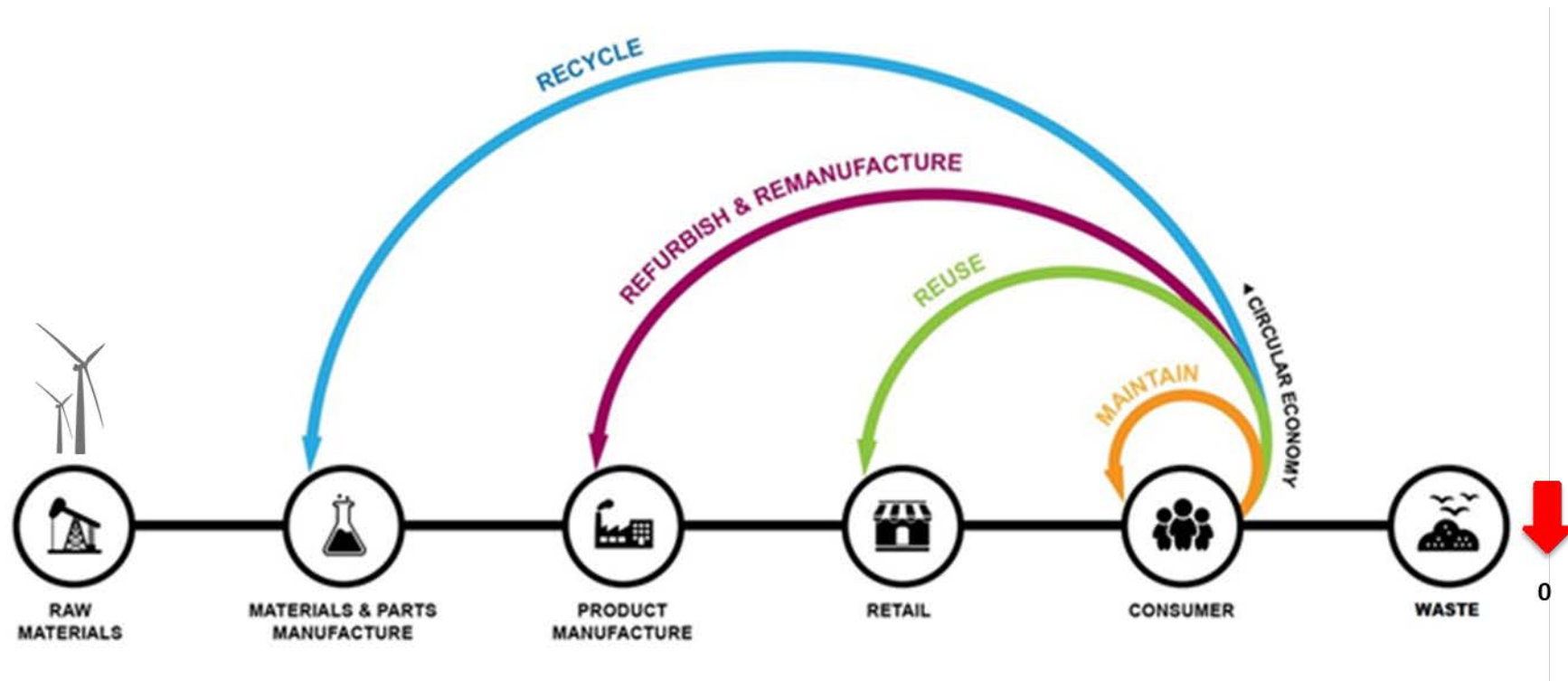
**Leonidas Milios and Carl Dalhammar**

*9<sup>th</sup> International Conference on Sustainable Solid Waste Management  
CORFU 2022*

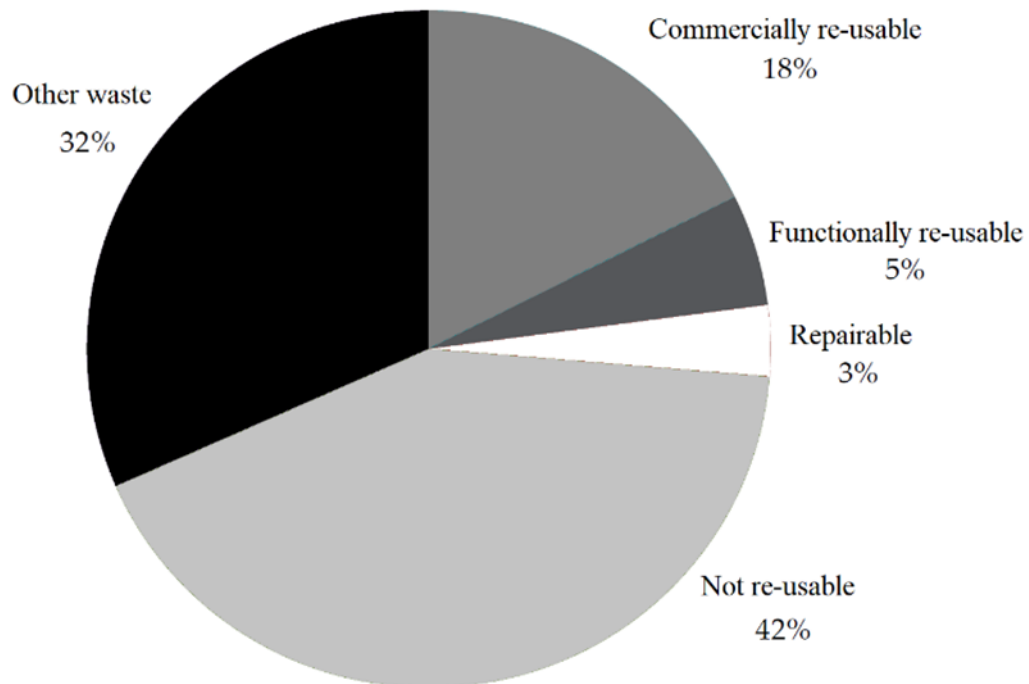
# Ascending the waste hierarchy



# The inner loops of the circular economy

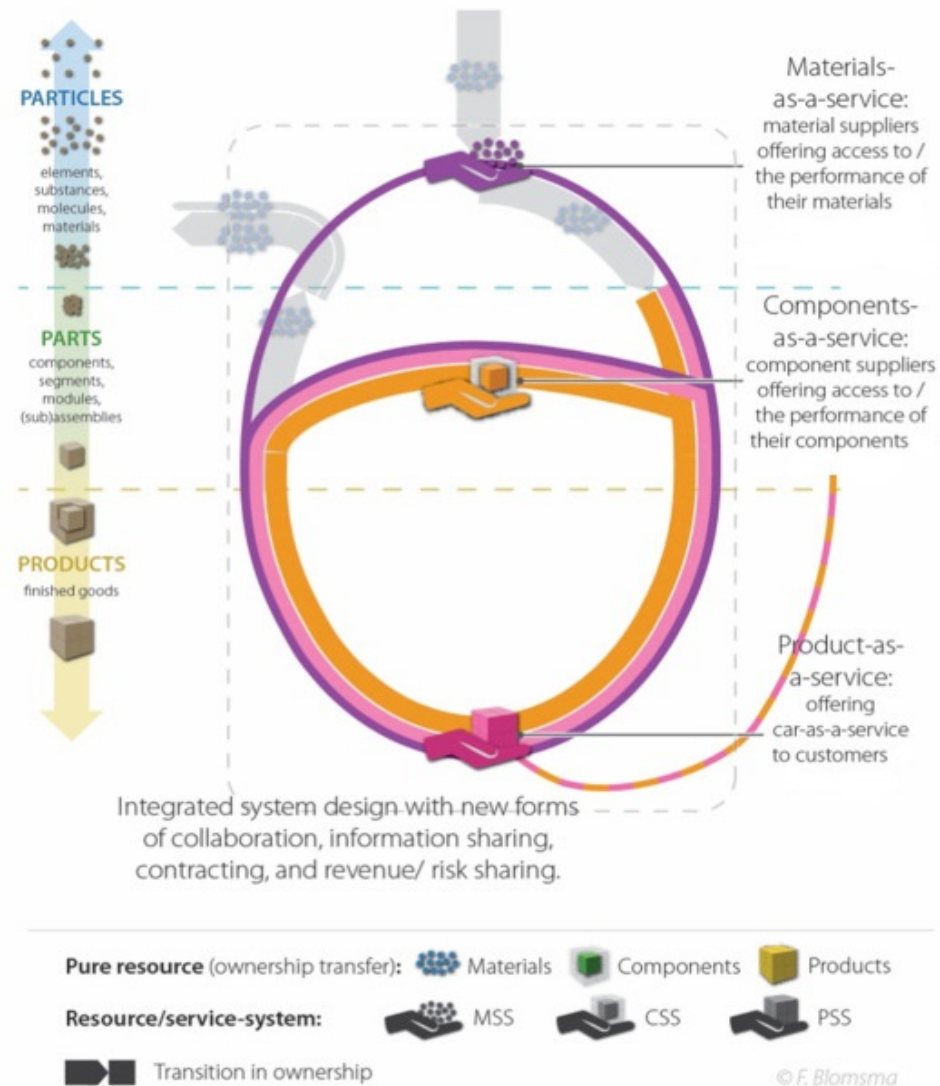


## Re-use potential found in collection for recycling



15.5 tonnes of waste was examined through composition analysis, and the re-use potential of nearly 17 000 products was assessed (Hultén et al., 2018)

# Material Management Systems

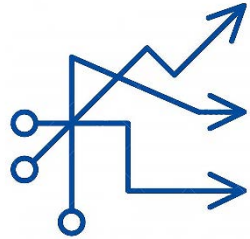


Source: Blomsma et al., 2022

# Preliminary research findings

- Pilot study on the recycling industry in Sweden
  - semi-structured interviews with major recycling companies in Sweden (10 interviewees from 3 recycling companies >80% market share)
  - plan to expand the study on minor players in Sweden, as well as recycling companies in the EU – active in multiple Member States

*Source: Dalhammar et al., 2021*



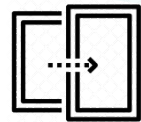
### Trends

- Going from selling large quantities with limited profit margins, to managing more materials streams with lower volumes but higher added value
- More cooperation with other actors; assigning resources to actors who can extract the highest value
- Want to compete more with the mining industry



### New business operations

- Re-use of products and components in new applications
- Work together with OEMs on “Design for re-use and recycling”
- Circular consulting



## “Recycling industry in transition”

### Major barriers

- Recycling industry not seen as an “industry”
- Recycling industry not always represented well in political processes
- Swedish authorities makes it hard to recycle, through 1) legal interpretations; 2) lack of leadership; 3) lack of guidelines, harmonised practices, and appropriate end-of-waste processes



### Opportunities

- Exchange of information/data from various actors in product/material chains
- from ‘fixing problems’ to ‘future resource management’
- Public leadership
- Masterplan at EU and national levels
- Re-use properties of materials in products, a process that is on the borderline between re-use and recycling
- Recyclers as ‘interface’ between diverse actors

# Conclusion

- Recycling companies must be ready to face decreasing market volume in certain waste streams and respond by increasing market value by high value-retaining operations such as repair and reuse.
- Recycling companies must identify potential competitors and potential partners to facilitate joint collection and management of resources (EOL products). If not, they would have to develop internal capabilities and business models of reuse vs. recycling.
  - especially for products e.g. WEEE, building materials, packaging



# Thank you!

## Questions?



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