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Poster: Circular packaging in home delivery of groceries a step towards climate neutral last mile deliveries

Silva, Nathalie

2023

[Link to publication](#)

Citation for published version (APA):

Silva, N. (2023). *Poster: Circular packaging in home delivery of groceries: a step towards climate neutral last mile deliveries*. Poster session presented at Research day for early career innovation researchers, Lund, Sweden.

Total number of authors:

1

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LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00



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CIRCULAR PACKAGING IN HOME DELIVERY OF GROCERIES

a step towards climate neutral last mile deliveries

NATHALIE SILVA, PACKAGING LOGISTICS, LTH, LUND UNIVERSITY - 2023

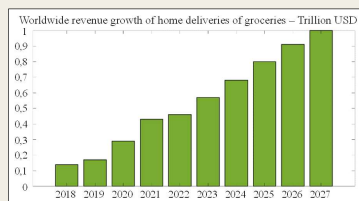
Introduction – ‘Take, make, waste’ model

Home deliveries of groceries have been expanding drastically worldwide.

Current business models are developed so that **packaging** is disposed of after one single-use.

Refrigerated vans are also part of the problem, as they require a substantial amount of energy to keep the temperature.

- Vehicles have low thermal efficiency, typically, around 40%.



Linear models exacerbate:

- Resource consumption
- Pollution
- Waste production
- Waste mismanagement

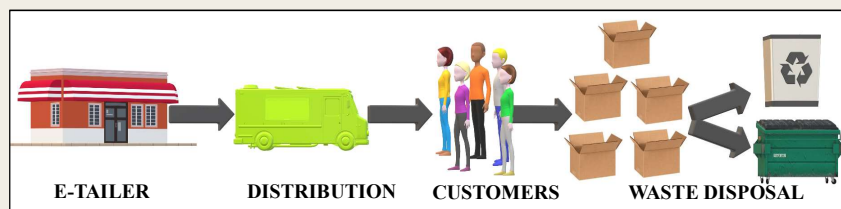


Figure 1. Linear model – packaging turns into waste after one single use and e-tailers do not have control over how packaging waste is sorted by customers.

Proposal – ‘Make, reuse, repair, recycle’ model



Figure 2. Circular model – packaging is returned, inspected and cleaned (and repaired if needed) to be used multiple times. After worn out, the boxes are sent to the recycling facilities.

Reusable and biodegradable box with insulation properties.

The solution includes ice packs to **cease the need for refrigerated vehicles**.

After the delivery, the box is either:

- **Collected** after customer emptied the box (attended deliveries)
- **Kept by the customer** and returned in the next delivery (unattended deliveries)

- ❑ **Slowing loops** (reusing, repairing)
- ❑ **Closing loop** (recycling)

Managerial implications

Implementing an efficient reverse logistics system sets off new opportunities to:

- Re-circulate primary packaging
- Control over packaging waste
- Increase flexibility to accept other returns

Policy implications

Policy makers are aiming at different strategies to encourage and/or force more sustainable practices, we emphasise:

- Reduced taxes for proven circular services
- Control and certify green labels

New processes, more costs?

New processes that might increase the overall costs:

- Inspection and cleaning of boxes
- Maintaining/repairing damaged boxes
- Space for storing and handling boxes
- Adjustments in the production lines

Contact

Nathalie Silva

PhD Candidate, Packaging Logistics

Faculty of Engineering

Lund University, Sweden

+46 76 133 68 55

nathalie.silva@plog.lth.se

<https://www.linkedin.com/in/nathaliesilva21/>



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