

## Implementing circular design strategies through co-creation: An action-research case in the household goods sector

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### Context

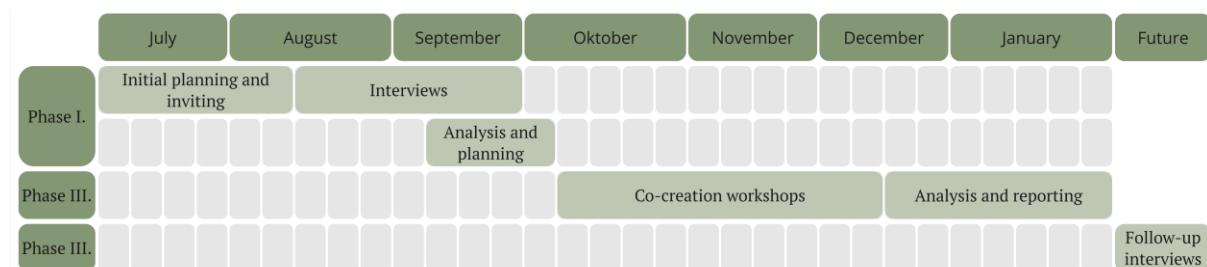
This study examines how co-creation can facilitate the adoption of circular design strategies in product development, including longer-lasting products, repair, refurbishment and recycling. The research was conducted in collaboration with a multinational company producing small household goods. The goal of this research was to explore how the co-creation process can support the implementation of circular design strategies in the product development process.

Co-creation (Sanders & Stappers, 2008) is recognised to have great potential for the success of circular propositions, especially in stakeholder engagement, organizational change, value creation and innovation (Brown et al., 2021; Dokter, 2023; Pedersen et al., 2023; Van Dam et al., 2021). However, a gap is identified, in measuring how and to what extent co-creation contributes to the adoption and upscale of the circular economy (Van Dam et al., 2021).

The company's existing eco-design guidelines centered around energy efficiency, avoiding harmful substances, packaging, recycled materials and repairability. As part of its sustainability strategy, the company aimed to enhance these and explore other circular strategies, such as design for durability, aesthetic longevity, and refurbishment. Co-creation was employed to develop and implement circular design guidelines while aligning and engaging various actors within the company and involving them in decision-making throughout the process.

### Methodology

Action research was iteratively conducted, in close collaboration with a company representative, who acted as a change agent throughout the process. The research plan consisted of three phases and included explorative interviews, co-creation sessions and follow-up interviews (Figure 1). Phase I. and II. has been carried out prior to submitting this abstract. Both interviews and workshops took place online, due to participants being located in various countries in Europe and Asia.



**Figure 1 Research timeline.**

In the first phase, 15 interviews were conducted, to explore challenges and opportunities around existing eco-design guidelines and the transition towards circularity. The participants fulfilled various roles within the company in product development, procurement, marketing, quality, etc. The interview results served as a basis for designing the co-creation workshops.

Three co-creation workshops were planned in total, with objectives building on each other. The first workshop aimed to envision circular futures within the company, with emerging topics such as longer-lasting products, timeless collections, servitization and subscription systems. Building on this, several circular scenarios and design principles were explored in more detail in the second workshop, including, for instance, recycling, repair,

standardization and modularity. The third workshop set the goal to consolidate which strategies the company will focus on in the upcoming years and create implementable roadmaps towards them.

Each workshop aimed to include around 10 participants, some of them returning. Several co-creation techniques were incorporated into the exercises, such as scenarios, roleplaying, visioning, road-mapping and design games to support the participants' visions of a more sustainable (company) future and engagement in tangible design decisions.

The data analysis from this collaboration is still in progress, after which a set of follow-up interviews is planned to take place in the spring of 2025 to evaluate the impact of co-creation on the implementation of new circular guidelines.

## Results

### *Circular strategies*

Preliminary findings regarding the implementation of circular strategies revealed challenges such as organizational and value-chain readiness, lack of knowledge sharing and difficulties in applying product design guidelines in out-of-house product development. It also highlighted tensions, for instance between 'product quality vs. recycled material content', 'manufacturing cost vs. design for repair', 'consumer safety vs. right to repair', 'product longevity vs. current standard of designing products for 5-7 years'.

Opportunities have also been highlighted, for instance, focusing on standardization and modularity which could open possibilities for upgrading products; launching self-repair programs; expanding warranty; extending the understanding of refurbishment to include all returned products and exploring take-back programs both for refurbishment and a way to increase recycling rates.

The roadmaps developed over the third workshop offer actionable and time-bound insights into the next steps on circular strategies prioritized by the company. Actions for the first year, for instance, include 'developing an overview of material needs for all business units' to upscale recycling, 'creating an overview of key components that could be standardized cross-category' for repair

or 'mapping current partners and their capacity to expand' on refurbishment, among others.

Follow-up interviews will offer an opportunity to reflect on which actions have been completed, which challenges have been resolved and which opportunities have been leveraged successfully following the co-creation process, and what role co-creation played overall.

### *The co-creation process*

In line with co-creation literature findings, challenges around the co-creation process have been also confirmed. These included selecting and engaging participants, especially in an online environment, and addressing power dynamics among participants, and between participants and the design research team. But also, organizational barriers, such as hierarchy, conflicting goals, changes in management, lack of management support, and time constraints.

### *Co-creation impact*

While the impact of the co-creation process on the implementation of circular strategies will be clearer after follow-up interviews have been conducted, it was indicated by participants that the co-creation process successfully negotiated between relevant actors and brought forth relevant challenges and ambitions which need to be addressed for a successful transition. Furthermore, relevant opportunities have been highlighted, which the company can leverage in the future to create a circular impact.

## Conclusion

This study provides actionable insights into how co-creation can support the implementation of circular strategies, like longer-lasting products, repair, refurbishment or recycling in the product development process. By reflecting on challenges and opportunities around the outcome and the process, findings contribute to practical implications of transitioning towards circularity in an organizational context, as well as to the academic discourse on the role of co-creation in scaling the circular economy.

The final results of this collaboration – expected to be concluded in the spring of 2025 – will offer actionable insights into co-creation's role in advancing product longevity, making a significant contribution to the PLATE 2025 discussions.

## References

Brown, P., Baldassarre, B., Konietzko, J., Bocken, N., & Balkenende, R. (2021). A tool for collaborative circular proposition design. *Journal of Cleaner Production*, 297, 126354. <https://doi.org/10.1016/j.jclepro.2021.126354>

Dokter, G. (2023). Circular design through co-creation: Exploring perspectives and future directions for design in a circular economy. Chalmers University of Technology.

Pedersen, S., Clausen, C., & Jørgensen, M. S. (2023). Navigating value networks to co-create sustainable business models: An actionable staging approach. *Business Strategy and the Environment*, 32(1), 240 – 258. <https://doi.org/10.1002/bse.3127>

Sanders, E. B.-N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5–18. <https://doi.org/10.1080/15710880701875068>

Van Dam, S., Sleeswijk Visser, F., & Bakker, C. (2021). The Impact of Co-Creation on the Design of Circular Product-Service Systems: Learnings from a Case Study with Washing Machines. *The Design Journal*, 24(1), 25–45. <https://doi.org/10.1080/14606925.2020.1851427>