**Editorial**
6th PLATE 2025 Conference
Aalborg, Denmark, 2-4 July 2025

# Product Lifetimes: The Current Research Landscape

**Linda Nhu Laursen[a], Andreas Kornmaaler Hansen[a], Amalia de Götzen[a], Carl Dalhammer[b], Eleonore Maitre-Ekern[c], Harald Wieser[d], Ingun Grimstad Klepp[e], Irene Maldini[f], Isabel Ordóñez[g], Jessika Richter[b], Johannes Roland Scholz[h], Katherine Townsend[i], Katherine Whalen[j], Kirsi Laitala[f], Kirsi Niinimäki[k], Lise Magnier[l], Luca Simeone[a], Mathias Lund[a], Romina Santi[m], Sofia Soledad Duarte Poblete[m], Stefano Salzillo[n]**

a) Aalborg University, Aalborg, Denmark
b) Lund University, Lund, Sweden
c) Norwegian Institute for Water Research (NIVA), Oslo, Norway
d) Austrian Institute for SME Research, Vienna, Austria
e) Consumption Research Norway (SIFO), Oslomet, Oslo, Norway
f) Oslo Metropolitan University, Oslo, Norway
g) Elisava Barcelona School of Design and Engineering, Barcelona, Spain
h) Technische Universität Berlin, Berlin, Germany
i) Nottingham Trent University, Nottingham, United Kingdom
j) RISE Research Institutes, Stockholm, Sweden
k) Aalto University, Espoo, Finland
l) Delft University of Technology, Delft, The Netherlands
m) Politecnico di Milano, Milano, Italy
n) Università degli Studi della Campania "Luigi Vanvitelli", Naples, Italy

**Keywords**: Design for longevity, repair, product lifetime modelling, policy, business models, rebound effects, textiles, enduring consumption

**Introduction**: In recent decades, the average lifespan of consumer goods has declined. This accelerating turnover of material goods is environmentally unsustainable. As researchers, we are uniquely positioned to build knowledge, interrogate and reshape the systems that drive shorter product lifetimes and premature obsolescence. As the Circularity Gap Report 2024 starkly reminds us, the urgency of this work cannot be overstated. Between 2016-2021 – in just six years – we have consumed 78% of the resources consumed in the entire 20th century (Fraser et al., 2024). At the same time, secondary material consumption has decreased from 9,1% in 2018 to 7,2% in 2023, which represents a 21% drop (Fraser et al., 2024). The environmental cost of this trajectory is staggering, and the circularity of material-use cannot keep up with the increase in global consumption.

The Product Lifetimes and the Environment (PLATE) conference brings together some of the leading researchers trying to address ways for us to align our consumption more realistically within our planetary means. Within the PLATE community, there is a shared recognition that the current patterns of production and consumption are unsustainable and that extending product lifetimes is a critical, though complex, strategy for reducing environmental impact. However, the mechanisms behind product lifetime extension may also come into question. Therefore, it is crucial to approach the topic of environmental impact caused by product consumption from different angles.

The tracks of the 6th Product Lifetimes for the Environment conference (PLATE2025), summarised here in this editorial, is indeed an effort to reflect the needed breadth and depth of this research agenda. Rather than isolated domains, these tracks form a dynamic and interconnected landscape of inquiry, each contributing to a more comprehensive understanding of how we can design, use, and govern products within planetary boundaries. In this editorial, we summarise publications from 12 thematic tracks. The contributions to PLATE2025 contribute to the broader trajectory of the field, it is both a reflection of the state of the art and a call to action. As we move forward, the PLATE community must continue to challenge assumptions, bridge disciplines, and imagine alternatives. Only then can we create and sustain products and societies that last.

## Design for longer lasting products and buildings

Extending the lifespan of products and buildings is crucial for addressing climate change, reducing resource consumption, and promoting resilience. The contributions in this track examine how design practices, regulatory frameworks, business models, and user engagement can converge to enable more durable and adaptable systems, ranging from toys and packaging to mobility and the built environment.

A central theme is the interplay between design and regulation. Sporchia et al. (2025) highlight how current assumptions in building regulations, particularly those related to service life and end-of-life treatment, limit the climate mitigation potential of engineered timber. By revising these assumptions and enabling the reuse and cascading use of timber elements, design can unlock substantial environmental benefits. Schneider et al. (2025) contribute a methodology to support the selection and evaluation of R-strategies (e.g., reuse, remanufacture, recycle) based on the characteristics of specific product types. Applied to vehicle doors, this approach allows designers to compare design variants and assess circularity readiness at the component level.

Within the built environment, Viljanen et al. (2025) explore how product-service systems can support regenerative and long-lasting buildings by integrating material selection, maintenance services, and business models such as leasing or performance-based procurement. Similarly, Münster & Adriansen (2025) propose design strategies to transform underutilized commercial spaces into modular, multifunctional service hubs. Their work shows how architectural interventions can prolong not only physical lifespan, but also the social and functional relevance of buildings. Gaier & Kramer (2025) adds that circular construction practices must overcome systemic misalignments between project-based logic and long-term sustainability goals, calling for improved collaboration and governance.

Durability also emerges through user-centered design. Avcı (2025) introduces the concept of “Design for Evolving Play” to address premature obsolescence in toys. Through participatory design with children, the study reveals how adaptability, modularity, and emotional attachment can extend product life. This user-centric perspective is echoed by Komlóssy et al. (2025), who explore how co-creation can facilitate the implementation of circular design strategies by actively involving different actors in the repurposing of household goods.

Bradley, Corsini, Baird, et al. (2025) analyze reusable packaging systems, highlighting how factors such as stakeholder alignment, return logistics, and ownership models affect operational success. Dhondt et al. (2025) further investigate the redesign of single-use products for reuse, showing that effective implementation relies on coordinated action across design, infrastructure, and policy. Both studies emphasize that design for reuse is inherently systemic.

Rahman et al. (2025) present a national case of circular bioeconomy in Finland, where long-life wood-based products are embedded in a network of actors supported by public policy, research institutions, and regional cooperation. Finally, Ruggiero et al. (2025) examine the application of ecodesign methodology in the context of luxury yacht design. Their case illustrates how principles of circularity and durability can be balanced with high-end aesthetics and technical complexity, offering a useful reference for other sectors where performance and image are tightly coupled.

Taken together, the papers in this track show that designing for durability is not a singular technical act but a multidimensional effort. From product to policy, from material to meaning, enabling longer-lasting products and buildings requires new ways of thinking, collaborating, and designing across scales.

## Enduring consumption

The abundance of products and ease of which consumers have access to a global market from the comfort of their homes has likely contributed to a shift away from enduring consumption.
It is of great importance to better understand the underlying mechanisms that promote enduring consumption of consumer products. The papers in this track focus on the emotional

dimensions and consumer perceptions that affect how products and materials are perceived. It dives into second-hand shopping and the importance of specific knowledge and competences for consumers to find it attractive to shop second-hand.

Özkürkçü & Doğan (2025) investigates ways to prevent plastic waste from the plastic toy market through imbedding emotional durability as a design strategy to promote more sustainable consumption. Most toys are typically discarded within 6 months. Repairability and ways to modify toys could help prevent this early replacement. Similarly, (Sun et al., 2025) identifies design strategies aimed at prolonging the epistemic value of consumer electronics. Consumer electronics is an important topic as e-waste continues to grow globally. To combat this, Zafer et al. (2025) highlights the need for sustainable design practices to reduce e-waste and prolong product use. They explore emotional value retention in consumer electronics, addressing design vulnerabilities that affect consumer emotions over time. Cooper et al. (2025) made a comparative analysis of household appliances and electronic goods over 25 years revealing trends in ownership, lifespan, and consumer attitudes towards acquisition, repair, and disposal. They found that the consumption patterns of household appliances and electronic goods remain environmentally unsustainable. Westervaarder & Mugge (2025) provides insights into consumer perceptions of product lifetimes and replacement behaviours and highlight the influence of societal trends and personal experiences on replacement decisions of electrical appliances. Steiner (2025) explores co-creation experiences in enhancing consumer engagement and product longevity, focusing on how these experiences can empower consumers to maintain, customize, and repair their products.
There are psychological differences between refurbished and new electronic products and Krishnan & Rana (2025) highlights how, with refurbished products, consumers prioritize battery health, service-related aspects, packaging, and hygiene, while new product buyers emphasize features and aesthetic factors. Nilsson et al. (2025) highlights the significant effort required for product circulation among consumers and reuse enablers. They emphasize the need to understand the entire product circulation process and identify three main circulation processes: *Donation*, *Commission Sale*, and *Sell-It-Yourself*. It reveals challenges in circular product transactions and the role of reuse enablers in facilitating recirculation.
Green & Treilhou (2025) identify a high level of invisibility regarding material things in daily interactions, suggesting that individuals often overlook the materiality of objects in their interactions with them. Frahm & Laursen (2025) presents second-hand shopping as a skill to be honed and trained, while (Irving-Munro & James, 2025) highlights consumer values and ethical beliefs regarding purchasing, use, and disposal experienced in C2C sales of second-hand clothing. As highlighted by Iving-Munro & James (2025) with second hand clothing, hygiene is also a perceived barrier in consumers for repurposed furniture (Sumter et al., 2025). Sumter et al. emphasize the importance of storytelling in enhancing the perceived value of repurposed products. Not all turn to repurposed furniture as indicated by the growing 'fast furniture' market. Furmston & Braithwaite (2025) advocates for further exploration of global dynamics in fast furniture consumption and the role of consumer education in sustainability initiatives.
Finally, Amatuni et al. (2025) assess the Total Cost of Ownership (TCO) for various products, integrating price, lifespan, and repair costs. The authors challenge the notion that higher-priced products are always more economical in the long run – in fact – results indicate that cheaper products can offer better long-term cost-efficiency and sustainability.

## Business models for longevity

Extending product lifespans is central to advancing a circular and sustainable economy. As linear models driven by rapid consumption and planned obsolescence continue to strain environmental resources, business models that emphasise longevity through reuse, repair, refurbishment, resale, and leasing offer promising alternatives. These approaches reduce waste and emissions and generate new value propositions for consumers and industries alike. The Business Models for Longevity track brings together diverse empirical and conceptual contributions that explore how longevity-oriented models can be effectively implemented across sectors, focusing on real-world challenges, stakeholder dynamics, and design strategies.
The 14 papers in this track - comprising both extended abstracts and full research papers -

address product longevity through varied lenses and contexts, spanning fashion (Whalen, 2025), electronics (Bunodiere & Duflou, 2025; Proske et al., 2025), healthcare (Harding et al., 2025), packaging (Bradley, Corsini, & Ceschin, 2025), and furniture (Italia et al., 2025). Several contributions focus on consumer behaviour and market dynamics, highlighting how perceptions of value, trust in service models, and context-specific preferences influence adoption and effectiveness (Brask et al., 2025; Simmons et al., 2025). Others emphasise organisational and infrastructural enablers, such as the fit between reuse models and institutional settings, the role of supply chains in enabling second-life applications, and the importance of collaboration across value networks (Dokter, Mallalieu, et al., 2025; Suikkanen et al., 2025).

Design emerges as a recurring theme, particularly in strategies for take-back, reuse, and the prevention of product failure before market entry: user-centric product-service models and collaborative ecosystem design illustrate how product and service innovation can support longevity (Choi et al., 2025; Laursen et al., 2025). Governance and policy are also addressed, especially in contexts where coordination across actors, such as in healthcare or end-of-life product repurposing, is essential for system-level change (P. H. Andersen et al., 2025; van Hees et al., 2025).

Collectively, these papers underscore the necessity of tailoring business models to specific social, cultural, and material contexts. They show that there is no one-size-fits-all solution; rather, effective models account for local behaviours, infrastructure readiness, and stakeholder alignment. They also call for greater experimentation, community participation, and data-driven frameworks to monitor, adapt, and scale longevity initiatives. Future research should deepen comparative analyses of circular models across geographies and industries, assess long-term environmental and economic impacts, and explore digital enablers for transparency and coordination. Expanding interdisciplinary collaboration between designers, technologists, policymakers, and consumers will be key to unlocking the full potential of business models that support sustainable product lifespans.

## Repair, Care, and Maintenance

Repair and maintenance of products is a crucial part of what determines a product's lifetime. In most cases, people exhibit a higher willingness to repair products that they care about. As such, this track offers a glimpse into different facets beyond mere material properties and composition.

A large part of the papers highlights the importance of community together with repair, and how the act of repair may have multiple benefits beyond prolonging the life of a product e.g., how transformative repair may aid in situations of bereavement and loss (Keulemans et al., 2025). Community-led repair practices such as repair cafés also extend beyond their immediate environment, creating social bonds and developing skills (Korsunova & Lundberg, 2025; Markussen et al., 2025; Peirson-Smith et al., 2025; van Kaathoven et al., 2025). Such social repair spaces may serve to empower individuals through the act of repair (Hemstock & Herbert, 2025) that appears to have a positive and lasting effect on repair attitudes and behaviour through skill-sharing (Gorniak & Niinimäki, 2025). Taking onset in repair focused social hubs, Kalantidou & Brennan finds that such hubs may also be used for community renewal with a positive effect on a community's social responsibility e.g. indicating increased chances of employability for at risk youths by giving them a sense of belonging and by learning new skills (Kalantidou & Brennan, 2025b, 2025a). However, increased transparency and greater focus on such repair events is needed (Vung et al., 2025). People tend to throw away or store electrical or electronic equipment (EEE) rather than turning to alternatives such as repair cafés (Sahin et al., 2025).

Consumer knowledge plays a large role when it comes to whether products get repaired or not. Upton & James (2025) investigated performance swimwear and found that much swimwear falls victim to premature disposal due to lack of knowledge and maintenance. Similarly, (James et al., 2025) advocates for more responsible wardrobe management, and highlights how a big part of repair efforts currently is related to the level of attachment experienced to a piece of garment. Limited knowledge of repair and maintenance methods, or, perceptions of hygiene and expectation of a chronic "newness" leads to replacement before garments are functionally unusable (Peters,

2025). However, for textiles that are deemed unsuitable for resale, Mak et al. (2025) found that many stains, such as perspiration and oil, could be effectively removed, thus allowing for resale of treated items.

From a professional repairer's perspective, it is found that there is a lack of spare parts while original equipment manufacturers (OEM) often fail to provide important repair support, making it harder for consumers to repair their household appliances (Rovira-Menaya et al., 2025). Across consumer electronics, fashion, and furniture classifications, the price of repair and perceived repairability are significant factors influencing repair decisions for consumers (Hansen et al., 2025). Perceived obsolescence caused by limited skills and resources may be combatted by increased repair accessibility e.g. in the form of mobile repair stations (Çiftçi & Peters, 2025), through repair-focused service design (Apostolova et al., 2025) or using emerging technology to guide the repair process (Jin et al., 2025; Terzioğlu, 2025).

Designing products for repair is investigated from a fashion company's point of view by (Das et al., 2025) and from a problem-based learning perspective (beyond merely assembly and disassembly) by Parmentier et al. (2025) who present redesign of an electrical device where cognitive and physical interactions during repair are taken into account. However, van Dolderen et al. (2025) highlight that while design for repair may increase repairability, it may negatively affect mechanical recyclability, which may be important to consider in one's product design.

Finally, Hirpa et al. (2025) highlight a bigger repair culture of EEE in Ethiopia compared to EU countries, while (Møller et al., 2025) argues how experiences with repair in one's upbringing predicts one's tendency to repair products later in life.

## Product lifetime modelling

The ability to model product lifetimes is increasingly critical for enabling sustainable design, policy development, and circular economy strategies. The papers in this track provide both methodological advancements and applied insights into how product lifetime modelling can support repair, reuse, extended use, and informed decision-making across sectors ranging from packaging and furniture to electronics and mobility.

A key theme across contributions is the integration of Life Cycle Assessment (LCA) with lifetime modelling to better account for the environmental impacts of extended use. Audrain & Cuénot (2025) propose an LCA approach to quantify the environmental benefits of repair and reuse in the WEEE sector. By comparing scenarios of replacement versus extension of use for household appliances, their model demonstrates that even moderate lifetime extensions can lead to substantial reductions in climate impact, especially when low-impact spare parts are used. Similarly, Anand et al. (2025) investigate how LCA studies of remanufactured products capture or omit usage-specific parameters. Their systematic literature review reveals a predominance of assumptions and a lack of empirical modelling of user behaviour, suggesting that current LCA practice often fails to reflect actual usage conditions.

Focusing on the textile and footwear sector, Costanzo et al. (2025) analyse how lifespan is modelled within LCA studies for garments and shoes. Their review classifies functional unit definitions into approaches based on care cycles, number of wears, years of use, or durability tests. The authors argue that while diverse modelling approaches exist, a harmonized method is needed to fully capture the interplay between consumer behaviour and product performance.

Clemm et al. (2025) shift the focus to reuse interventions in the smartphone market, using a population-level simulation model informed by consumer survey data. Their analysis shows that extending warranties for second-hand smartphones significantly increases reuse rates and lowers demand for new products, while other interventions (like free data erasure services) have a negligible effect. Their approach demonstrates how behavioural data can inform macro-level modelling to estimate the climate benefits of circular interventions.

Nguyen et al. (2025) provide a conceptual and empirical distinction between individual and cumulative lifespan of products through a study on furniture. They show that while individual ownership is influenced by emotional attachment, it is the accessibility of resale or donation systems that most strongly drives cumulative longevity. This reframes lifetime extension as a systemic property, influenced as much by social and logistical infrastructure as by design.

On the regulatory and reporting side, Nicolajsen et al. (2025) examines how lifetime extension activities are currently underrepresented in national statistics. Using data from Danish

reuse organizations, the study highlights significant discrepancies between actual reuse activities and their categorization in official datasets, calling for improved data infrastructure to support lifetime-based policies. Finally, Pathan & Aurisicchio (2025) assess 21 circularity indicators for packaging to evaluate how well they capture the concept of product lifetime. Their analysis finds that most indicators are biased toward end-of-life management and neglect short use cycles, regulatory conditions, and infrastructure aspects, suggesting a need for more holistic indicators that account for the reality of single-use products.

The contributions in this track explore how product lifetime can be extended through a variety of strategies, ranging from data-informed modelling and circularity indicators to behavioural insights and repair-supportive policy frameworks. Together, they offer a multifaceted look into how the duration of use is shaped not only by product features but also by systemic conditions, assessment methodologies, and user interactions.

## Policies for longer lifetimes

Policies aimed at extending product lifetimes are receiving increasing attention as governments and institutions seek to advance circular economy (CE) objectives. There is growing momentum for regulatory frameworks addressing durability, repairability, and obsolescence, but challenges remain in enforcement, scope, and socio-political alignment. The European Union (EU) has emerged as a global leader in developing policies that promote longer product lifespans. This is partly explained by EU Member States' adoption of progressive policies. Dalhammar et al. (2025) highlight France's pioneering measures, including the criminalization of planned obsolescence, mandatory repair indices, and repair vouchers. These national policies have not only influenced EU-wide initiatives, such as the Ecodesign for Sustainable Products Regulation (ESPR), but have also raised concerns about the trade-offs of harmonization potentially diluting progressive standards. Meanwhile, Gulati et al. (2025) critically assess the ESPR's capacity to address premature obsolescence, noting that while it addresses technical and economic factors, it falls short in tackling symbolic obsolescence and consumer culture.

These behavioural dimensions are explored by Bretschneider (2025), who applies an institutional economics lens to show that disposal decisions for electronics are shaped by ownership and disposal costs, highlighting hurdles that cannot be solved by regulation alone. Complementing this, Beigi & Franconi (2025) propose a "Design for Traceability" framework that uses digital passports and smart identification technologies to enhance transparency, accountability, and lifecycle tracking, enabling better enforcement and circular business models.

Globally, regulatory efforts remain inconsistent. Cipriano (2025) contrasts Brazil's statutory ambiguity on spare part availability with the EU's fixed-term requirements, arguing this conflicts with CE objectives. In Australia, O'Neill et al. (2025) analyse the country's "Right to Repair" inquiry and reveal that obsolescence is framed primarily as a matter of consumer choice, thereby shifting responsibility away from producers. Despite stakeholder support for mandatory design interventions, the resulting policy recommendations emphasized product labelling over regulation.

Policy fragmentation is also evident in sector-specific contexts. Bhatnagar et al. (2025) examine textile policy in Europe and find that while regulatory intensity has increased post-2020, many policies still prioritize recycling over durability or reuse. Similarly, Ferrero-Regis & Pushpamali (2025) critique Australia's narrow recycling focus, especially in Queensland, where the lack of a roadmap for textile circularity marginalizes small businesses and higher-order strategies like repair and upcycling.

Policies for longer lifetimes in the built environment reveal similar gaps. Thaher et al. (2025) examine Queensland's construction sector, where policy incentives emphasize recycling over more transformative practices like disassembly, deconstruction, and material reuse. They call for stronger regulatory alignment and infrastructure to promote higher-order circular strategies.

There is also a need for policies to move beyond only focussing on technical efficiency to question the scale and speed of production and consumption. Molnár & Dalhammar (2025) introduce a sufficiency-oriented policy perspective. Arguing that current policies often emphasize doing more with less, while neglecting the need to simply do less. Sufficiency approaches—such as promoting repair, shared ownership, and longer legal guarantee periods—remain underrepresented

in mainstream policy despite their potential for transformative change.

## Sufficiency and design for less

The *Sufficiency and Design for Less* track rethinks consumption from a minimalistic, resource-conscious perspective and offers a vision for sustainable futures rooted in frugality, imagination, and responsibility. The four presented papers demonstrate that sufficiency is not about doing without, but about doing differently, rethinking value, redefining waste, and reorienting desire.

One paper by Hansen & Laursen (2025) explores actor constellations that reveal the potential of manufacturing "new waste" through collaborative redesign. By studying real-world cases, the authors show how partnerships among designers, manufacturers, waste processors, and distributors can turn discarded materials into viable products, when aligned business goals and material flows exist. This actor-resource-activity approach presents sufficiency as a systemic challenge, enabling to meet needs within planetary limits by curbing excessive consumption levels.

Granato & Mugge (2025) investigate how combining static and dynamic social norms influences sustainable fashion choices. Across two studies, the authors found that messages highlighting widespread and increasing overconsumption (unsustainable static and dynamic norms) led participants to buy fewer clothing items and support consumption-reduction policies. This effect is explained by social moral cleansing, that is, people's inclination to compensate for others' unsustainable behaviour. The findings offer a novel approach to promoting sufficiency through norm-based communication.

Konovalov & Remm (2025) present six creative research methods that foster engagement with nature, positive activism, and the aesthetics of degrowth. Using gardening as a metaphor, they explore how artistic and design practices can strengthen our response-ability and shift focus from doing more to doing meaningfully.

In their paper, Magnier et al. (2025) investigate how perceived sacrifices shape consumers' willingness to adopt sufficiency behaviours in clothing, such as buying less, choosing second-hand, sharing, or extending garment lifetimes. It identifies seven types of sacrifice, from emotional to financial, and shows how these perceptions can act as barriers to change. By uncovering the subjective and varied nature of what people feel they must give up, the study offers valuable insights for designers, policymakers, and marketers aiming to make sufficiency possible and appealing.

Finally, Vermeyen et al. (2025) explore the potential of adopting smaller wardrobes as a path to sufficiency in fashion. Through wardrobe audits and reduction exercises, the authors reveal how much clothing people really need, challenging the norms of overconsumption. While practical and emotional barriers remain, the study highlights how prioritising versatility and emotional connection to garments can support a shift from excess to essentials, opening up new possibilities for more mindful and sustainable ways of dressing.

Together, these papers show that sufficiency is not about less for the sake of less, but about reimagining systems, behaviours, and desires to align with planetary limits. They offer inspiring pathways toward sustainable futures, where creativity, collaboration, and conscious choices redefine what it means to live well with less.

## Rebound effects and critical views on product durability

Research and policy on product lifetime extension (PLE) and durability has traditionally taken for granted that these approaches lead to environmental and social benefits in line with circular economy objectives. These advantages are expected to materialise in lower demand for new products by consumers and reduced volumes of production by industry. However, instead of being 'used up' and turning into waste, many products fall out of use long before they break down. Moreover, products that remain in use do not necessarily prevent the demand and production of additional products (Maldini et al., 2025), as the volume of materials circulating and stocked in affluent regions is continuously growing (Krausmann et al., 2017; Wiedenhofer et al., 2021). It has been traditionally assumed that PLE leads to delays in product replacement, and accumulation has been ruled out as an equally feasible result of product longevity (Maldini et al., 2025). Under these conditions, highly durable products may fail to limit overconsumption and even exacerbate the environment impacts of production and end of life of more robust products, and the energy and infrastructure needed to maintain growing volumes of materials in use (Conn, 1977; Wieser et al.,

2023). Durable products and infrastructures can also create lock-in effects that hinder change towards more sustainable practices (Haberl et al., 2017). To account for such important phenomena, more integrative perspectives are needed that consider not just matters of speed and waste, but also how they interact with high volumes and resource intensities in use (Wieser et al., 2023).
Since little attention has been paid to the actual environmental effects of PLE within the growing research community on product lifetimes, this session is an invitation for critical self-reflection: Are we moving in the right direction? Are our efforts really helping to reduce material depletion? Are the material and behavioural conditions needed for PLE to have the desired effect present in our everyday lives? What new ways of thinking can help us in advancing the field for more significant impact?
The contributions that will be presented in this track include assessments of rebound effects associated with PLE efforts (Makov & Meshulam, 2025) and ways to prevent them (Mammen et al., 2025; Mckay et al., 2025). Other studies offer design perspectives (Mammen et al., 2025; Rückschloss & Tochtrop, 2025; van der Loo et al., 2025) or critical perspectives of PLE related policies (Klepp et al., 2025; Richardy et al., 2025). The track includes a combination of conceptual papers building on literature reviews (Klepp et al., 2025; van der Loo et al., 2025) and proposing methods and models (Guzzo & Pigosso, 2025; Mammen et al., 2025; Mckay et al., 2025), and the results of empirical research aimed at understanding the daily and interconnected nature of product use (Hegnes et al., 2025; Makov & Meshulam, 2025; Petersen et al., 2025). Some of the specific product categories studied are clothing (Klepp et al., 2025; Makov & Meshulam, 2025; Richardy et al., 2025), electric appliances (Rückschloss & Tochtrop, 2025), cars (Mckay et al., 2025), and disposable products such as gloves (Hegnes et al., 2025) and diapers (Petersen et al., 2025).
Altogether, these contributions provide a starting point to critically reflect on the relation between PLE and environmental impacts focusing on concrete situations or product categories. What is expected from the discussion and exchange at the conference is a broader discussion about the usefulness of PLE to enable a positive environmental transition. This angle also provides a promising direction for future critical research. Are rebound effects a consequence of imperfect application of circular economy ideas, or the inevitable result of a framework that is unfit to tackle the environmental crisis?

## Education, tools, and games for product lifetimes

This track focuses on engaging and informing various stakeholders to foster circularity and extend product lifetimes. The 10 full articles and 3 extended abstracts are informative and practice-oriented, with eight describing digital or physical tools and four incorporating games or gamification strategies. Contributions address different lifecycle stages: design & production (8), use-phase & maintenance (4), and end-of-life (7). They target a diverse range of actors, including designers, manufacturers, and marketers (5), product users (6), and end-of-life stakeholders (3). The work collectively addresses the complexity of circular transitions through inter- and transdisciplinary approaches, combining qualitative and quantitative methods from design, psychology, sociology, engineering, and IT.

Various physical and digital tools developed to educate, guide, and engage stakeholders in circularity are showcased. (Dumon et al., 2025) analyse 10 new circularity tools intended to support companies in circular product design. (Dokter, Silva, et al., 2025) explore the “Social Impact Audit Tool” (SIAT) in a product design project course. (Schoen et al., 2025) develop an indicator to evaluate the environmental benefits of robotic production in manufacturing hotel furniture. (Ko et al., 2025) present a framework for the development of Digital Product Passports (DPPs) in various product categories, testing it with a third-party DPP for iPads in schools. Whalen & Renström (2025) test the “Collaborative Circular Value Creation Canvas,” a tool developed to enhance communication between companies and identify circular collaboration opportunities.
Games and gamification, as standalone tools or as parts of physical or digital tools for communicating circularity, are increasingly being researched and applied to engage new groups and simplify complex systems. Reinhard & Schmidt (2025) offer a smart city App containing an AI-driven circular consumption and a gamification-driven biowaste tool. Scholz et al. (2025) develop a collaborative card game to communicate circularity principles from the perspective of

material recovery initiatives that recirculate items from existing waste streams.
Three articles educate product designers and users. Lewe & de Lamballerie (2025) test citizen engagement activities for sustainable clothing consumption. Barrios-O'Neill et al. (2025) aim to "translate" the process of biobased textile recycling by using interdisciplinary, multisensory, and speculative design. Hall et al. (2025) explore, via interviews, how sustainability information about circularly designed garments is communicated to users, noting frequent information loss in the supply chain. The two remaining articles describe innovative pedagogical approaches addressing design students. Flipsen & Persaud (2025) describe the experience of using productive failure theory in an elective on "repair." Patnaik & Isaacs (2025) present a multidimensional pedagogical approach that applies waste management knowledge for a combination of entrepreneurship and sustainability.

The development and application of tools, gamification and games, and educational approaches appear to support circularity and the transition toward longer product lifecycles. However, research and evidence on the long-term effects of such interventions on actual product circularity and lifecycle stakeholders remain notably scarce.

## Materials and longevity

Materials durability is today a critical issue for addressing environmental sustainability in a profound and systemic way. Rethinking materials' longevity and temporality requires questioning durability in relation to technical, expressive and sensorial qualities, aesthetic transformation, socio-cultural meanings and their role in shaping more equitable, circular and responsible futures.
From fashion to furniture, and from reclaimed to bio-based materials, the contributions in this track reflect the complexity of reconciling durability with environmental sustainability. While several authors present material innovations and circular strategies with strong applicative potential — including bio-based composites for indoor use (Turhan-Haskara, 2025), man-made cellulosic fibres for textiles (Durán-Rubí & Vence, 2025), blended recycled fabrics for circular systems (Forst & Goldsworthy, 2025), and the integration of technical, aesthetic and emotional dimensions in textile design (K. R. Andersen et al., 2025) — these approaches also bring to light critical tensions like the systemic risks of overproduction in the fashion sector (Durán-Rubí & Vence, 2025) and the fragile perception of reused materials in specific social contexts (Behal et al., 2025).
At the same time, these tensions invite a broader reading of materials as active agents embedded in cultural, ecological, and affective contexts, whose evolution and perceived value are shaped by time and use as illustrated by Ramage & Bassereau (2025), who reinterpret discoloration as a meaningful trace of ageing, and by Briones Castro & Schmidt (2025) who explore the expressive and performative complexity of upcycled textiles. The affective and perceptual dimensions of design are further investigated by (Guarino et al., 2025), exploring emotional and relational durability through care by the integration of living organisms in wearables, and by Bahrudin et al. (2025), who address the human 'sense of order' by combining biomaterials with a formal 'mechanical aesthetic'.
The topics of circularity and material reuse are widely discussed. Briones Castro & Schmidt (2025) discuss circularity and reuse through valorisation of garment waste. Addressing pre-consumer industrial waste, Lund & Laursen (2025) present a model for integrating upcycling into ongoing business practices. In parallel, Sander & Laursen (2025a) introduce the "Reshape" strategy, aimed at preserving the functional and aesthetic integrity of materials, and propose to overturn dominant paradigms by embracing imperfection as an integral part of material experience, consciously designing for change over time Sander & Laursen (2025b). Moreover, as shown by (Sumter et al., 2025) in the context of repurposed furniture, strategies that aim to foster durability must carefully balance functionality with identity, symbolic coherence, and perceived quality. In a similar direction, Alan et al. (2025) propose a narrative-based design approach, employing material journey mapping and anthropomorphism, to reveal the transformation of discarded materials and strengthen material–user relationships.
The challenge of material longevity calls for interconnected disciplines and coordinated approaches. Escande & Shea (2025) argue for the development of circular computational methods that are applicable at an industrial scale. Eheliyagoda et al. (2025) show that improving the recyclability of critical elements requires supportive policies and infrastructures. Goeppel et al. (2025) emphasize the socio-economic dimensions of lithium battery

recycling, while Ferraresi & Curto (2025) highlight the persistent gap between ecodesign principles and material selection in industrial practice. Folkmann & Ricard (2025) present a case study from LEGO to address the need for practical case examples improving the longevity of injection mould design. Gasparini & van der Velden (2025) presents ethical questions regarding current human consumption and suggest viewing resource consumption through 'time-circles'.

Looking ahead, several key research directions emerge across the different thematic trajectories addressed in this track. These include the systemic integration of ecodesign with materials development and selection; a deeper investigation into user-material relationships to support behavioural change; and an expanded exploration of criteria and methods for assessing material sustainability and circularity — including social and economic dimensions. Altogether, this collection of contributions invites a critical and creative rethinking of materiality, longevity, and temporality — toward the design of systems capable of lasting through change.

## Clothing, footwear, and accessories longevity

Several papers in this track highlight the important aspect of attachment to products we own and wear. Attachment process strongly connects to formation of our self-identity through appearance, abstract symbols but also through wear experience. The self-identity can be connected to the image of garments or shoes (Lombard et al., 2025), use practices (Matthews, 2025) or changes on our body (Gal, 2025). Researchers navigate a circular fashion future through concepts of attachment and detachment, focusing on personal fashion practices related to modifying, auditing and tracking well-loved clothing items (Matthews, 2025) including casual, formal, and velskoene footwear (Lombard et al., 2025). The role of spirituality (Martinez, 2025), and mindfulness (Huang et al., 2025) are emerging themes in attachment discourse. Research shows that spiritual mindset can even reduce consumers' need for external approval for their appearance (Martinez, 2025). Oppositional contexts of luxury fashion (McNeill & Ibrahim, 2025) and even the interest to use repair services (Karell & Niinimäki, 2025) are also explored as responsible behavioural catalysts. Different methods for measuring durability are proposed by researchers assessing the use, failure and disposal of everyday items such as T-shirts (Morris et al., 2025), and workwear (Hall, Taudal, et al., 2025; Thiyagarajan et al., 2025). Upcycling is envisioned as a creative and social practice that is essential for testing and upscaling pre-consumer textiles (Child, 2025) and post-consumer clothing waste streams (Vanacker et al., 2025). Remanufacturing is perceived as an opportunity for the empowering Township elderly women (Khumalo et al., 2025), while the hyper-local recirculation of secondhand clothing is supporting sustainable innovation through donation-thrift networks (Kozlowski et al., 2025).

In transiting from linear economy model to circular one, designers need help and tools to implement this change. An advisory tool for circular material selection offers fashion designers a route to extending clothing longevity (Thiyagarajan et al., 2025) or improving durability (Mazzitelli et al., 2025). Buy-back programs was shown to reduce overall consumption inciting interest in novel business models to help reduce consumption (Wennberg & Baldauf, 2025).

Fashion hacking and zero waste fashion (Salomè, 2025), as well as modular fashion (Zhang et al., 2025) and remaking approaches (English, 2025) challenge the design practices even at the industrial level (Borcherdt & Child, 2025).

LCA Lifecycle analysis are needed to assess the environmental impacts (Dahan et al., 2025) e.g. in laundry (Zuin et al., 2025) and it can be done by using open-source tool (Makov & Vivanco, 2025). It is also worthwhile to raise critiques towards assessment methods and tools that are used as well as towards ecolabels and their content. Researchers propose e.g. adopting a system-based lifecycle approach to improve the current ecolabels (Kesidou & Palm, 2025).

Even while we are researching the sustainable practices and strategies in design or manufacturing, consumers still play an important role in longevity of product lifetimes. Accordingly, it is important to research garment lifetimes from the angle of consumers and through the aspect of active garment use (Kuzmycz & McCorkill, 2025), reuse and garment lifetime expectations (Payne et al., 2025). Even explore the potential of clothing swaps to enable the reactivation of passive garments (Vermeyen & Germeys, 2025) or look to the past how historical garment design may

inform circular design and longevity of modern garments (Skjold et al., 2025).

## Digital longevity

The emergence of digitalisation across various practices and industries is inevitably changing the world and hereby has an impact on the environment. This paper track addresses both the opportunities presented by digital tools across sectors and the need for critical reflection on their broader implications.

Corsini & Terzioğlu (2025) explores how digital technologies like IoT, AI, and digital twins can support a circular economy in the Electrical and Electronic Equipment (EEE) sector. Through a horizon scan and case study analysis, the study identifies opportunities to extend product lifecycles and improve resource use, while also addressing risks such as increased e-waste. The findings highlight both the potential and challenges of building a digitally enabled circular economy for EEE.

Similarly, another study by Lange et al. (2025) identifies business opportunities for high-tech SMEs adopting Digital Product Passports (DPPs). The study presents a roadmap that highlights benefits such as extended product lifecycles, improved supply chain transparency, and hands-on learning, using literature reviews, stakeholder interviews, and four co-creation workshops with engineers, service teams, business developers, and managers from six companies. Adu et al. (2025) emphasise five key areas for circularity and ecological sustainability in Germany and Europe's information and communication technology sector. These were identified through a systematic approach involving surveys, expert interviews, roadmap analysis, literature review, and market research. The study highlights the need for green data centers, power electronics, quantum technologies, circular microelectronics, and sustainable supply chains.

Wetherell et al. (2025) provide a more specific example of use of digital tools, by exploring how digital 3D tools and archived design patterns support the redesign and remanufacturing of deadstock garments. Two case studies assessed the impact of CLO3D on product longevity: one focused on historical garment archives and the other on a contemporary collection of 30 deadstock sportswear garments. The study shows potential in how digital tools can help expand the use and value of existing garments.

Finally, van der Velden (2025) introduces the concept of "digital degrowth," which calls for realigning digital technologies to be regenerative, ecologically sound, and socially just. Her work reflects on the rebound effects of digitalisation and emphasises the need for resource efficiency in digital efforts.

Together this paper track explores the sustainable possibilities of digitalisation while also highlighting the importance of critically reflecting on its unintended consequences.

## Concluding remarks

The PLATE2025 contributions underscore the urgent need to extend product lifetimes as a multifaceted strategy for environmental sustainability. It highlights how design, consumer behaviour, business models, policy, education, and digital tools must align to reduce material throughput and foster circularity. While promoting durability, repair, reuse, and sufficiency, the PLATE community also critically examines potential rebound effects and systemic barriers that may undermine these efforts. Ultimately, it calls for interdisciplinary collaboration and reflective practice to ensure that longevity truly contributes to sustainable and equitable futures.

## References

Adu, L., Aslan, T., Gorlova, K., & Thesen, M. (2025). Navigating Trends and Ecological Sustainability Needs in Germany and Europe's ICT Industry. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment, Aalborg. https://doi.org/10.54337/plate2025-10347

Alan, A. C., Gelmez, K., Efilti, P., Yılmaz, O., Sezgin, H., Yalçın, İ., Öztemur, J., & Özdemir, S. (2025). Exploring Material Potentials for Product Design: In Pursuit of a Narrative-Based Approach. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10364

Amatuni, L., Faludi, J., & Sprecher, B. (2025). The Hidden Cost of Cheap: Are We Paying More for Short-Lived Goods? *Proceedings of the 6th Product Lifetimes and the Environment*

*Conference*. Product Lifetimes and the Environment (PLATE). https://doi.org/10.54337/plate2025-10449

Anand, K., Ryan-Fogarty, Y., & Fitzpatrick, C. (2025). Life cycle assessment (LCA) of remanufactured electrical and electronic products; a review of methodological choices. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10351

Andersen, K. R., Skjold, E., Nyvang, L., Bang, A. L., Tolnov, A., Harsaae, M. P., & Jørgensen, P.-E. (2025). Design-ability in the Circular Economy of Textiles. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10417

Andersen, P. H., Ali, M., Anvari-Moghaddam, A., Nielsen, R. P., & Eng, M. (2025). Re-purposing Wind Turbine Blades: Matching Strategies and Inno- vation Governance Forms. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10269

Apostolova, V. Y., Simeone, L., & Laursen, L. N. (2025). A Preliminary Review of Service Design for Repair Practices. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10445

Audrain, G., & Cuénot, L. (2025). Coupling LCA and product lifetime modeling to support repair & reuse: A case study in the WEEE sector—Plate Conference 2025. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10377

Avcı, E. O. (2025). Design for Evolving Play: Exploring Levels of Adaptability in Toy Design. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10422

Bahrudin, F. I., Kian, L. Y., Zakariya, K., Daud, N., & Dong, P. (2025). Sense of Order: The Effects of Machine Aesthetic on Biomaterials Favourability. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10401

Barrios-O'Neill, D., Ribul, M., Pisapia, C. T., Yan, Y., Rungta, D., Selby, L., Ren, X., Quintana, C., Morrow, R., Lanot, A., McQueen-Mason, S., & Baurley, S. (2025). Learning by Transforming: Widening Access to Complex Circular Economy Science using Experimental Design. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10353

Behal, A., Islam, S., & Tan, C. S. L. (2025). Exploring Parental Engagement in Sustainable Practices for School Uniforms: A Circular Economy Perspective. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10375

Beigi, H., & Franconi, A. (2025). Design for Traceability (DfT): How to enhance transparency and accountability by designing products and materials with features that allow their entire lifecycle to be tracked and documented? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10322

Bhatnagar, A., Manivannan, A. C., & Niinimäki, K. (2025). European Policy Strategies for Textile Product Life Extension: Current Implementation and Challenges. *Proceedings of the 6th Product Lifetimes and the Environment*

*Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10325

Borcherdt, M., & Child, E. (2025). A Shared Vision: The importance of Knowledge Exchange through Co- design in Scaling Circular Strategies for Fashion Remanufacture – Case studies from global perspectives. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10425

Bradley, C. G., Corsini, L., Baird, H. M., & Ceschin, F. (2025). Reusable Packaging Systems: Design recommendations for fostering and sustaining consumer adoption. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10349

Bradley, C. G., Corsini, L., & Ceschin, F. (2025). Implementing reusable packaging systems: Lessons from industry. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10337

Brask, L. G., Greve, N.-P., & Hansen, A. K. (2025). Exploring Consumer Behavior on Product Longevity as a Pathway to Product-Service System Adaptation. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10440

Bretschneider, W. (2025). Getting rid of electrical and electronic equipment. Disposal decision and service life in the light of institutional economics. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10410

Briones Castro, Y., & Schmidt, S. M. (2025). Circular fashion and new materialities from repurposing waste: A discussion on the opportunities for the valorisation of material design from and for wearable garments. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg.

Bunodiere, A., & Duflou, J. R. (2025). Enhancing Critical Raw Material Usage through Battery Cell Extraction and Reuse. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10439

Child, E. (2025). Testing methods of remanufacture of pre-consumer textiles in scalable environments. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10414

Choi, Y. J., Dong, J., & Pyon, J. (2025). Exploring take-back recovery strategies in the Circular Economy: A Multiple Case Study Analysis. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10274

Çiftçi, G., & Peters, G. (2025). Mobile Fixer Studio: How to repair one item at a time on campus. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10271

Cipriano, T. A. R. P. (2025). Availability of spare parts and product lifetime in Brazilian law. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10432

Clemm, C., Amatuni, L., Chun, Y.-Y., & Moon, D. (2025). Measuring the Impact of Smartphone Reuse Interventions on

Consumer Choice and Product Lifetime – Preliminary Findings. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10428

Conn, W. D. (1977). Consumer product life extension in the context of materials and energy flows. *Resource Conservation: Social and Economic Dimensions of Recycling*, 127–143.

Cooper, T., Watkins, M., Javareshk, M. B., & Baguley, T. (2025). Have prospects for product life-spans improved? A comparison of trends in household appliances and electronic goods over 25 years. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE). https://doi.org/10.54337/plate2025-10391

Corsini, L., & Terzioğlu, N. (2025). Building a Digital Circular Economy for Electrical and Electronic Equipment. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment, Aalborg. https://doi.org/10.54337/plate2025-10305

Costanzo, A., Frey, M., & Niero, M. (2025). Exploring Lifetime Modeling Approaches in Life Cycle Assessment of Textiles and Footwear. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10298

Dahan, A., Benkirane, R., Scaglia, T., & Thomassey, S. (2025). Test less, better, faster, cheaper. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10300

Dalhammar, C., Vonderscher, F., Leonet, S., & Richter, J. L. (2025). National leadership for legislating longer product lifetimes: French policies and their interaction with European Union policies. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10307

Das, M., Ahsan, N., & Rooy, D. V. (2025). Unveiling the Power of Repair Services in Enhancing Consumer Repair Behaviour in the Fashion Industry: A Crucial Step Towards a Circular Economy. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10262

Dhondt, K., Harding, C., & Watts, R. (2025). Redesigning single use to reuse: Identifying opportunities for surgical instrument sets. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10289

Dokter, G., Mallalieu, A., Hallstedt, S. I., & Isaksson, O. (2025). Collaboration towards the design of sustainable and circular value chains: Reviewing the state-of-the-art in literature and practice. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10294

Dokter, G., Silva, P. F. B., Tuveson, J., & Hammersberg, P. (2025). Navigating social sustainability in engineering education: Student experiences and challenges of using a social impact audit tool in a product design project. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10458

Dumon, L., Parmentier, D., Hoveskog, M., & Ostuzzi, F. (2025). Examining longevity in tools for a circular economy. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg.

https://doi.org/10.54337/plate2025-10403

Durán-Rubí, E., & Vence, X. (2025). Regenerated cellulose fibers synthesized with recycled textiles: A circular bioeconomy milestone for material longevity or another fiber overproduction escalation? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10290

Eheliyagoda, D., Veluri, B., Liu, G., & Ramanujan, D. (2025). Can Circular Economy Strategies Limit the Prospective Dysprosium Demand in the European Union? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10333

English, J. (2025). Categorising Remaking Methods for Fashion Practitioners. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10270

Escande, M., & Shea, K. (2025). Computational Circular Design of Planar Linkage Mechanisms Using Available Standard Parts. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10309

Ferraresi, S., & Curto, B. D. (2025). Towards an integrative approach for ecodesign principles and sustainable material selection. A systematic literature review to explore scholarly contributions at the intersection of materials, sustainable design and household appliances. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10395

Ferrero-Regis, T., & Pushpamali, C. N. N. (2025). Gendered threads: Policy barriers to sustainable textile lifecycles. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10280

Flipsen, B., & Persaud, S. M. (2025). Experiencing Design for Repair, educating circular practitioners. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10365

Folkmann, E. B., & Ricard, L. M. (2025). Design for longevity in industrial products: A pedagogical case study on steel moulds for injection mould manufacturing. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10460

Forst, D. L., & Goldsworthy, K. (2025). Compatible blending for circular textiles with next-gen materials. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10370

Frahm, L. B., & Laursen, L. N. (2025). Not Just Luck: Uncovering the Secret Skills and Expertise of Second-hand Shoppers. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10282

Fraser, M., Conde, Á., & Haigh, L. (2024). *Circularity Gap Report 2024*. https://policycommons.net/artifacts/11317813/cgr-global-2024/12203525/

Furmston, K., & Braithwaite, N. (2025). How "Fast" is Fast Furniture? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg.

https://doi.org/10.54337/plate2025-10320

Gaier, J., & Kramer, S. (2025). Design for Circularity (DfCE) – How to Align Product Requirements With R-Strategies to Enhance Circular Economy on an Operational Level. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10413

Gal, A. (2025). Design for Sustainability: A Multi-level Framework from Products to Socio-technical Systems. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10409

Gasparini, A. A., & van der Velden, M. (2025). Minerals as Keepers of Time. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10299

Goeppel, P., Ott, J., Zimek, M., & Baumgartner, R. J. (2025). Assessing socio-economic impacts of Lithium-Ion Battery recycling through Multi-Regional Input-Output Analysis. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10339

Gorniak, K., & Niinimäki, K. (2025). "Spring Cleaning": Skill-sharing towards conscious clothing consumption. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10361

Granato, G., & Mugge, R. (2025). Leveraging social norms for sustainable behaviour: How the exposure to static-and-dynamic-norm communications encourage sustainable behaviour towards reduction of fashion consumption. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10293

Green, C., & Treilhou, S. (2025). Guilty (or invisible) materiality in everyday object relations? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10324

Guarino, N., Ferraro, V., & Rognoli, V. (2025). Designing materials with living organisms for care-based practices: An analysis of case studies within the wearables domain. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10450

Gulati, B., Dillenseger, L., Cresci, I., & Luzzati, T. (2025). Does the EU Eco-design for Sustainable Product Regulation Address Premature Obsolescence? A Systemic Perspective on Barriers to Longer Product Lifetime. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10336

Guzzo, D., & Pigosso, D. C. A. (2025). The rebound mechanisms identification tool: Finding rebound effects in circular economy business models. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10332

Haberl, H., Wiedenhofer, D., Erb, K.-H., Görg, C., & Krausmann, F. (2017). The Material Stock–Flow–Service Nexus: A New Approach for Tackling the Decoupling Conundrum. *Sustainability*, *9*(7), Article 7. https://doi.org/10.3390/su9071049

Hall, C. A., Ravnbøl, K., & Pedersen, J. (2025). Communicating Circular Design: A ReSuit case study of embedding knowledge of circularity from design to

wholesale to shop assistant. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10315

Hall, C. A., Taudal, S. L., & Bundgaard-Nielsen, M. J. (2025). Defining Worn Out Workwear: Exploring how to assess garments for reuse within a laundry system. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10308

Hansen, A. K., & Laursen, L. N. (2025). One man's trash is another man's treasure: Actor constellations to prolong the life of 'new waste' resources. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10435

Hansen, A. K., Laursen, L. N., & Jørgensen, M. S. (2025). Worthy or not worthy? Repair motivations and barriers from consumers across fashion, furniture, and consumer electronics in Denmark. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE). https://doi.org/10.54337/plate2025-10426

Harding, C., Watts, R., & Travella, P. (2025). Matching reuse models to hospitals: Reframing value-chains for reusable medical products. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10285

Hegnes, A. W., Heidenstrøm, N., & Laitala, K. (2025). Hygiene practices in everyday Life: Exploring the adoption and environmental implications of disposable gloves. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10318

Hemstock, O., & Herbert, D. (2025). Repair as a vehicle for grassroots leadership in transition towards circular economy. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10405

Hirpa, H. K., Desissa, T. D., & Duflou, J. R. (2025). E-Waste Management Trend in Ethiopia: Strategies for Extending Electronics Lifecycles. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10454

Huang, S., Bakker, S., & Xue, H. (2025). Why Do You Buy? Introducing a Reflective Café Approach to Foster Mindful Clothing Purchases in Generation Z. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10376

Irving-Munro, A., & James, A. (2025). The Consumption Economy – Finding Value in Our Clothing. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10420

Italia, M., Pei, X., & Migliozzi, S. (2025). Designing a collaborative ecosystem for sustainability transition in the furniture industry: The Opendesk case. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10431

James, A., Peirson-Smith, A., Mutambo, N., Nicolson, S., & Irving-Munro, A. (2025). The Care and Repair Guide: Reducing Environmental Impact and Addressing Skills Gaps in Responsible Wardrobe Management. *Proceedings of the 6th Product Lifetimes and the Environment*

*Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10331

Jin, Y., Mugge, R., Balkenende, R., & de Hooge, I. (2025). The Value of Emerging Technologies for Enhancing Consumer Trust and Adoption of Repair Electronics. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10323

Kalantidou, E., & Brennan, T. (2025a). Repair as a driver of community-led behavioural change. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10402

Kalantidou, E., & Brennan, T. (2025b). Repair-focused social enterprises for environmental and social resilience. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10390

Karell, E., & Niinimäki, K. (2025). Consumers' interest in using clothing repair services in Finland. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10429

Kesidou, E., & Palm, C. (2025). Ecolabels in the Textile and Fashion Industry: Strengths, Weaknesses, and Recommendations for Improvement. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10297

Keulemans, G., Gaughwin, M., Jansen, T., & Parkes, B. (2025). Transformative repair beyond materiality: Care, bereavement and loss. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10276

Khumalo, M., Patnaik, S., & Chisin, A. (2025). Empowering Township Elderly Women: Upcycling Post-Consumer Waste Clothes into Sustainable Livelihoods. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10399

Klepp, I. G., Maldini, I., & Laitala, K. (2025). The limitations of product longevity: Are longer product lifetimes really better for the environment? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment, Aalborg. https://doi.org/10.54337/plate2025-10317

Ko, J., Okafor, N., Badurdeen, F., & Wang, P. (2025). Development of a Digital Product Passport for iPads to Enhance Student Sustainability Practices. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10418

Komlóssy, T., van Dam, S., & Bakker, C. (2025). Implementing circular design strategies through co-creation: An action-research case in the household goods sector. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10436

Konovalov, M., & Remm, J. (2025). Creative research methods for engagement with nature, positive activism and the aesthetics of degrowth. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10374

Korsunova, A., & Lundberg, P. (2025). The ReMake Cafes as a source of well-being: Being, doing and interacting as

motivations to participate. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10319

Kozlowski, A., McQueen, R., Roy, L., & Little, C. (2025). Hyper-Local Recirculation of Second-hand Clothing Through Donation-Thrift Networks. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10338

Krausmann, F., Schandl, H., Eisenmenger, N., Giljum, S., & Jackson, T. (2017). Material Flow Accounting: Measuring Global Material Use for Sustainable Development. *Annual Review of Environment and Resources*, *42*(Volume 42, 2017), 647–675. https://doi.org/10.1146/annurev-environ-102016-060726

Krishnan, K., & Rana, A. (2025). Behind the Stars: Consumer Personality and Review Composition for New and Refurbished Products. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10398

Kuzmycz, A., & McCorkill, G. (2025). Idle and Active Dresses: Design Briefings from the Wardrobe. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10427

Lange, K., Helmus, J., Boermans, D., & Oskam, I. (2025). Accelerating Circularity in High-Tech Manufacturing: Towards a Roadmap for Implementing Digital Product Passports (DPPs) at SMEs. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment, Aalborg. https://doi.org/10.54337/plate2025-10430

Laursen, L. N., Barros, M., Nielsen, C., Nøkleby, C., & Nielsen, K. (2025). No Product Lifetime! Why products fail pre-consumer. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10444

Lewe, E., & de Lamballerie, E. (2025). Citizen Engagement Activities: Applying Behaviour Change Techniques in Sustainable Clothing Consumption. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10304

Lombard, E., Taljaard-Swart, H., & Jacobs, B. (2025). I feel more like myself when I wear my velskoene: Exploring South African male millennial consumers' attachment to their velskoene. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10362

Lund, M., & Laursen, L. N. (2025). Upcycling from 'One-of-a-Kind' to Industry Scale: Leveraging Strategies to Prolong the Life of Industrial Waste Materials. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10306

Magnier, L., Kobus, C., & Tunn, V. (2025). Perceptions of sacrifice in the pursuit of sufficient consumption. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10412

Mak, W. S., McQueen, R., & Kozlowski, A. (2025). Treat and Clean: A pilot study in stain removal and mending of substandard thrift store donations. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE). https://doi.org/10.54337/plate2025-10411

Makov, T., & Meshulam, T. (2025). Recommerce Rebound Effects- The Case of Second-hand Apparel. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment, Aalborg. https://doi.org/10.54337/plate2025-10421

Makov, T., & Vivanco, D. F. (2025). Environmental Impact factors for Apparel Products: Generalizing LCAs with Statistical "Market-mix" Modeling. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10416

Maldini, I., Klepp, I. G., & Laitala, K. (2025). The environmental impact of product lifetime extension: A literature review and research agenda. *Sustainable Production and Consumption*, *56*, 561–578. https://doi.org/10.1016/j.spc.2025.04.020

Mammen, A. L., Hartvigsen, E. M. D., Pigosso, D. C. A., & Van der Loo, I. (2025). Nudging as a strategy to prevent behavioural rebound effects in the early phases of design. *Proceedings of the 6th Product Lifetimes and the Environment Conference*, 277301 Bytes. https://doi.org/10.54337/plate2025-10303

Markussen, T., Jørgensen, M. S., Dorland, J., Laursen, L. N., & Hansen, K. (2025). Repair Cafés as Circular Economy Enablers: Exploring Participants Practices through Social Practice Theory. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE). https://doi.org/10.54337/plate2025-10423

Martinez, C. M. J. (2025). Exploring spirituality's location in sustainable clothing consumption through "Black Swan" narratives. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10260

Matthews, R. (2025). Wearing and sharing #wardrobechallenges: Finding inspiration when you have nothing to wear. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10358

Mazzitelli, M., Papile, F., & Curto, B. D. (2025). CircularMAT: Materials Advisor Tool to promote circular material selection in fashion design. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10292

Mckay, L., Meneguim, L., & Pigosso, D. C. A. (2025). Leverage Points as an Analytical Framework for Preventing Rebound Effects: An Exploratory Study. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10314

McNeill, L. S., & Ibrahim, K. (2025). Can Promoting Fashion Innovativeness Move Traditional Luxury Consumers Toward More Sustainable Fashion Behaviours? - Plate Conference Proceedings Template 2025. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10329

Møller, S. R., Schmidt, K. S.-H., & Laursen, L. N. (2025). Repairing the upbringing: Socialization and product repair behavior. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10368

Molnár, M., & Dalhammar, C. (2025). Sufficiency in European Product Policies: Status Quo and Future Potentials. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg.

https://doi.org/10.54337/plate2025-10352

Morris, K., Joynes, A., Sumner, M., Scott, E., & Taylor, M. (2025). Measuring physical garment durability: An assessment of 47 T- shirts. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10277

Münster, M. B., & Adriansen, H. K. (2025). From Empty Shops to Vibrant Communities: Adaptive Reuse as a Sustainable Response to Retail Decline. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10419

Nguyen, A. K., Birkek, C. O., & Hansen, A. K. (2025). Convenience as a Key Driver in Extending the Cumulative Lifespan of Furniture. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10363

Nicolajsen, A. B., Bjørn, A., McAloone, T. C., & Pigosso, D. C. A. (2025). Mind the gap: To what extent are Danish early adopters of science- based targets addressing impacts across their products´ life cycles? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10312

Nilsson, K., Frahm, L. B., Rexfelt, O., Strömberg, H., & Laursen, L. N. (2025). Turning Trash into Treasure is Hard Work! How the Activities of Consumers and Reuse Enablers Extend Product Lifetimes. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10343

O'Neill, M., Maguire, R., Hurst, B., & Walton, A. (2025). What's the Problem with Product Obsolescence? Critical Policy Perspectives from Australia's Right to Repair Inquiry. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10489

Özkürkçü, E., & Doğan, Ç. (2025). Exploring Emotional Attachments in Children's Toy Relationships: A Generative Co-Design Approach to Design for Sustainability. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10330

Parmentier, D., Dumon, L., & Detand, J. (2025). Designing products that facilitate easy and intuitive repair, an implementation in product design education. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10356

Pathan, R. K., & Aurisicchio, M. (2025). Circularity Indicators for Packaging: A Literature Review and System-Based Classification. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10366

Patnaik, S., & Isaacs, S. (2025). Entrepreneurship and Waste Management: Cultivating Sustainable Solutions Through Education. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10443

Payne, A., Jiang, X., Street, P., Leenders, M., Nguyen, N., Pervan, S., & Tan, S. L. (2025). The influence of age, gender and income on Australians' expectations of clothing lifespan. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10291

Peirson-Smith, A., Wetherell, S. V., Singer, E., James, A., Irving-Munro, A., Mutambo, N., & Nicolson, S. (2025). Repairing and regenerating the community: A study in activating. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10407

Peters, E. (2025). Reviving Bedlinen: User Expectations, Use-Life, and Repair Practices in Australia. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10310

Petersen, M. K., Ankerstjerne, V., Bubinek, R., & Cimpan, C. (2025). No Product is an Island: The Case of Incontinence Pads in a Nursing Home. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10359

Proske, M., Morozov, A., Poppe, E., & Nissen, N. F. (2025). Beyond Ownership: The Environmental Impact of Rent, Repair and Refurbishment of ICT devices. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10396

Rahman, R., Korsunova, A., Dmitrijeva, A., & Toppinen, A. (2025). Circular bioeconomy business ecosystem in Finland: From barriers to solutions for wood reuse in construction. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10406

Ramage, L., & Bassereau, J.-F. (2025). Lightfastness Natural Color Database: A tool for designing evolving effects on textile surface through sunlight exposure. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10394

Reinhard, J. B., & Schmidt, I. (2025). From Clicks to Circular Behavior: A Smart City Mobile Application Leveraging AI and Gamification. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10355

Richardy, J., Skjold, E., & Skødt, T. (2025). The Wicked Problems of Durability: Rebound Effects and Textile Illiteracy in Circular Policy. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10392

Rovira-Menaya, P., Pina, C., & Sierra-Pérez, J. (2025). Existing barriers to consumer repair of small household appliances from a product design approach: A scoping review. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10288

Rückschloss, J., & Tochtrop, C. (2025). “Oh no, it’s broken!” – How product functionality limits lifespan. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10367

Ruggiero, L., Piccioni, M., & Ratti, A. (2025). Evaluating Ecodesign Methodology in Yacht Design: A Professional Workshop Case Study. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10301

Sahin, B., Clark, N., & Lilley, D. (2025). Is This the End? - Lifetime of Electrical and Electronic Equipment. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product

Lifetimes and the Environment (PLATE). https://doi.org/10.54337/plate2025-10459

Salomè, M. A. (2025). Re-Imagining Garment Cutting Waste: Fashion Hacking, Zero-Waste, and the Power of Negative Spaces. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10350

Sander, N., & Laursen, L. N. (2025a). Introducing the Reshape strategy: Preserving material integrity. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10437

Sander, N., & Laursen, L. N. (2025b). Material discard reasons: Categorising and characterising industrial waste materials. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10452

Schneider, F., Hansen, S., Redeker, J., Klose, G. I., Strube, M., Mennenga, M., Vietor, T., Völkerink, O., Herrmann, C., & Müller, M. (2025). Novel methodology for the selection and evaluation of R-strategies to support product design for circular economy. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10348

Schoen, T., Griffioen, S., Malé-Alemany, M., Rodrigues, M., & Kiestra, M. (2025). Impact of Robotic Circular Wood Processing: Lessons from the “One Plank” Challenge – using the AUAS Circular Wood KPI Framework. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10434

Scholz, J. R., Ordonez, I., & Rotter, V. S. (2025). Waste What? —A game to communicate about local circular economy practices. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10357

Simmons, C., McQueen, R., Kozlowski, A., & McNeill, L. (2025). Will it Make it to the Rack? An Investigation of Perceived Retail Value in Second-hand Clothing. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10275

Skjold, E., Stetter, R., Petersen, T. B., & Aas, K. (2025). Circulating History; Design Agency and the case of Museum Uniforms. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10341

Sporchia, F., Patrizi, N., Ruini, A., & Bastianoni, S. (2025). Revising regulations unleashes engineered timber buildings potential for climate mitigation. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10295

Steiner, R. (2025). Employing Pedagogy in the Experience Economy to Extend Product Lifetimes. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10448

Suikkanen, J., Heinonen, T., Horn, S., Judl, J., Räikkönen, M., & Sokka, L. (2025). Second-hand smartphones in Finland: Key actors, barriers and enablers. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg.

https://doi.org/10.54337/plate2025-10346

Sumter, D. X., Snäll, B., & Oskam, I. F. (2025). Selling repurposed furniture: An exploratory study into consumer perception. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10441

Sun, H., Granato, G., & Mugge, R. (2025). Design Strategies to Strengthen Epistemic Value in Consumer Electronics and Prolong Product Lifetime. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10369

Terzioğlu, N. (2025). AI-Powered Consumer Electronics Repair towards a Digital Circular Economy. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10424

Thaher, Y. A. Y., Schork, T., Pushpamali, N., Cowled, C., & Crowther, P. (2025). Towards Building Circularity in Queensland: Policy Gaps in the Built Environment. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10446

Thiyagarajan, J., Bäckström, M., & Waller, J. H. (2025). Analyzing Durability and Failures of Workwear Rain Jackets. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10379

Turhan-Haskara, G. D. (2025). Longevity and Biodegradability Assessment of Biobased Lighting Fixture Design for Interiors. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10321

Upton, B., & James, A. (2025). Improving the sustainability and durability of performance swimwear through consumer knowledge and usage habits. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10279

van der Loo, I. G. H., Mammen, Anna Lodberg, Hartvigsen, E. M. D., & Pigosso, D. C. A. (2025). Behavioural rebound effects and secondary benefits of sustainability-oriented design: Two sides of the same coin? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10302

van der Velden, M. (2025). Digital Degrowth – From Rebound to Regeneration. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment, Aalborg. https://doi.org/10.54337/plate2025-10296

van Dolderen, D. C., Versloot, D. L., Aghaeian, S., Bakker, C. A., & Balkenende, R. (2025). Designing Electronics for a Circular Economy: How to balance Repair and Recycling. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10335

van Hees, M., Oskam, I., & Bocken, N. (2025). Transformative and community-based participation in collaborative business model experimentation for urban upcycling. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10284

van Kaathoven, D., Huffman, E., & Mizuno, D. (2025). Making Mends: Visibly Mending the Circular Economy. *Proceedings of the 6th Product*

*Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10326

Vanacker, H., Lemieux, A.-A., Laitala, K., Dindi, M., Lamouri, S., & Bonnier, S. (2025). Extending the Lifespan of Garments Globally through Local Upcycling: A Multimethod Approach. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10283

Vermeyen, V., Duyvejonck, M., & Germeys, F. (2025). From excess to essential – Exploring the Potential of Adopting Smaller Wardrobes. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10360

Vermeyen, V., & Germeys, F. (2025). Garment Reuse in Practice—Insights from a Clothing Swap. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10393

Viljanen, A. M. K., Korsunova-Tsaruk, A., Oijala, S., & Toppinen, A. (2025). Product-service Systems for Regenerative and Long-lasting Buildings: Case of Wood in Finland. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10287

Vung, C., MacDonald, M. J., McQueen, R., & Kozlowski, A. (2025). The Importance of Reuse and Repair– A Call for Canadian Municipal Action to Promote Clothing Repair Events. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10372

Wennberg, M., & Baldauf, C. (2025). Customer Engagement – When do Circular Business Models Pay Off? *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10316

Westervaarder, J. T. E., & Mugge, R. (2025). Understanding Mental Book Value: Exploring Replacement Decisions and Lifetime Expectations. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10328

Wetherell, S. V., Shilton, L., & James, A. (2025). Utilising Digital Technology for Garment Longevity. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment, Aalborg. https://doi.org/10.54337/plate2025-10373

Whalen, K. A. (2025). Circular Fashion Success: Cross-Country Insights on Adoption of Circular Business Model Offerings. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10344

Whalen, K. A., & Renström, S. (2025). From Matching to Making: A Canvas for Collaborative Circular Value Creation. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10334

Wiedenhofer, D., Fishman, T., Plank, B., Miatto, A., Lauk, C., Haas, W., Haberl, H., & Krausmann, F. (2021). Prospects for a saturation of humanity's resource use? An analysis of material stocks and flows in nine world regions from 1900 to 2035. *Global Environmental Change*, *71*, 102410. https://doi.org/10.1016/j.gloenvcha.2021.102410

Wieser, H., Hofmann, F., Jaeger-Erben, M., & Marwede, M. (2023). 1. Durable economies: Towards a new research programme. In M. Jaeger-Erben, H. Wieser, M. Marwede, & F. Hofmann (Eds.), *Arbeit und Organisation* (1st ed., Vol. 10, pp. 7–48). transcript Verlag. https://doi.org/10.14361/9783839463963-002

Zafer, O. B., Mugge, R., & Magnier, L. (2025). Vulnerabilities of Design Strategies for Retaining Emotional Value in Consumer Electronics. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10447

Zhang, X., Normand, A. L., Wood, D. J., & Henninger, D. C. E. (2025). Modular Fashion: Sustainable Potential and Challenges for the Industry. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10354

Zuin, S., Dengin, V., Perzolla, V., Bisaro, F., Pipita, M. M., Azzano, A., Garzena, F., & Stabon, E. (2025). The Laundry Care LCA project. *Proceedings of the 6th Product Lifetimes and the Environment Conference*. Product Lifetimes and the Environment (PLATE), Aalborg. https://doi.org/10.54337/plate2025-10281