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Editorial: Case studies in circular economy

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Editorial on the Research Topic
[Case studies in circular economy](#)

Introduction

The Earth system is outside of the safe operating space for humanity for most of its main components, critically affected by anthropogenic activities (Steffen et al., 2015; Richardson et al., 2023; Vitti et al., 2024). Circular Economy (CE) is considered one of the main solutions to limit the overuse of these Earth's components, starting from manufacturing and expanding its action throughout the extended supply chain and the overall society (Sassanelli et al., 2023). However, the adoption of this paradigm asks organizations for multiple skills and competences, often needing the support of digital technologies, and society for a spread awareness and knowledge about its potential advantages (Straub et al., 2023; Beducci et al., 2024). Companies willing to pursue this groundbreaking transition need to adequate their business models (Bocken et al., 2014), organizations, and processes (Acerbi et al., 2024) to the CE paradigm and to convert linear lifecycles of their solutions in circular ones, acting primarily on their design (Bocken et al., 2016; Sassanelli et al., 2020). In addition, to trigger industrial symbiosis dynamics in the provision of circular solutions (Ghisellini et al., 2016), vertically and horizontally integrated circular supply chains need to be set (Chiappetta Jabbour et al., 2020; Taddei et al., 2024). Finally, CE ecosystems (Trevisan et al., 2022) are needed to involve all the stakeholders interested in the provision or use of these solutions. A major gap in the literature, is the shortage of best cases and applications of the CE paradigm (Ferrante et al., 2024). The editorial of the Research Topic series “*Case studies in circular economy*” is dedicated to showcasing research papers that demonstrate direct applications of sustainability research methodologies, concepts, and hypotheses, whereby readers can actively connect research methodologies with practical applications.

Case Studies (Yin, 2009) provide an opportunity for researchers to assess phenomena “*in-situ*”, thus providing insight that may otherwise be impractical in the instances of large datasets, and conceptual ideas. Assessing phenomena within a natural or real-life environment provides insight into human behavior and the practical consequences of a research methodology, concept, or hypothesis. This can be extremely useful for policy and decision-makers, as well as practitioners, who have to take into account how the research will affect their recipients. This is particularly important in sustainability, given the heterogeneity of socio-economic and environmental factors that include social mobility, manufacturing capabilities, receptiveness and adaptability technology advances, and of course, capital.

Four papers were published in the Research Topic. Despite the core focus documents local or practical experiences related to CE, two of them were aimed at proposing a method and the other two were original research contributions.

All of them were describing or reflecting on a program or practice and were centered around improving the function of a targetted community or audience. Indeed, a specific context (entry in foreign markets) and three different industries were addressed by them: construction demolition, End-of-Life (EOL) fishing gears, and airports.

In particular, [Eskiyeerli and Ewertz](#) conducted an in-depth case study to indicate the tactical adjustments that companies must implement to their circular business model to maintain economic competitiveness when entering foreign markets. Indeed, circular business concepts are first tested locally and companies may intend to use them to grow globally. However, circular business models involve cutting-edge goods and services and there are no standards for circular business models' entrance into foreign markets. The case involved introducing a circular service business model into a foreign market. As a result, the authors focused on the business model canvas's customer relationships section, identifying five tactical adaptations (offering tangible customized benefits, using start-up incubators/accelerators/co-working spaces as a marketing channel; increasing investment in social media marketing; implementing a co-creation tool for customization; and providing adjustable contract lengths).

While this contribution addressed from a generic perspective how to enter a foreign market, the other three provided practices strictly related to specific industries.

First, [Dytianquin et al.](#) also provided a method research. They evaluated five projects in EU member states to assess how on circularity in the construction and demolition industry (CDI) could balance the environmental, social, and economic dimensions of sustainability. They evaluated various weighting strategies using both subjective and objective methodologies to ascertain if project rankings change with respect to sustainability balance. The weighting methods that are employed may have an impact on the projects' rankings and recommendations for best practices in the CDI CE. It is generally recommended to weigh criteria objectively because it may have an impact on the final results of the project. Computational comparisons in this work, however, showed that subjective and objective approaches that make use of mathematical and statistical rigor do not vary appreciably. Therefore, it is still handy for subjective weighing procedures to produce reliable and consistent results. However, this shouldn't take away from attempts to develop objective weighing schemes that provide outcomes in scoring and ranking greater validity and reason.

In addition, [Erasmus et al.](#), involving 16 fleet managers of Namibian fishing companies, conducted a survey to explore the current practices, challenges, and opportunities supporting the adoption of CE in the context of EOL fishing gear. The majority of fishing companies involved have been in operation for more than 25 years and have been involved in demersal trawling. From the results it turned out that most of the fishing gear that the firms import were in a semi-complete status. Fishing nets and lines/ropes have a lifespan of around three and two years, respectively, which indicates that fishing gear trash is produced continuously. The

Namibian fishing sector produces, according to their estimates, roughly 104 tons of EOL fishing gear, lines/twine, and ropes yearly. Of this amount, only 10% is collected and repurposed. The main reason why none of the fishing firms recycle EOL fishing gear is a lack of recycling facilities. Selling to staff members, giving to other organizations, or disposing of them at dumping sites are the current normal techniques for managing fishing nets, lines, and ropes that are no longer in use. Even if certain EOL fishing nets, lines, and ropes are sold in open markets, they are not completely used to make a meaningful contribution to the CE since they are not turned into value-added items. Therefore, they advocate for the adoption of circular practices, to turn fishing nets, lines, and ropes that are no longer in use into high-quality apparel, accessories, and shoes, like sunglasses. This will help to minimize energy use, reduce pollution in the environment, and support sustainable production and consumption.

Finally, [van der Tuin-Rademaker et al.](#) focused on airports. As the primary hubs for international travel, airports must accommodate the rising demand for air travel brought on by an increase in passengers and the corresponding rise in resource consumption. Airport trash is enormous calling for a rigorous analysis of waste management procedures, particularly in light of the growing adoption of the CE in the aviation industry. To address this need, the Baseline Circular Airports Method (BCAM), a technique created and extensively tested at Schiphol Amsterdam airport, has been presented. BCAM conducts a methodical analysis of resource streams, taking into account their makeup, pertinent stakeholders, treatment procedures, and environmental effects. This creates a strategic framework for the prioritization of resource streams, enabling airports to carry out targeted and efficient actions. According to BCAM analysis, it is possible to estimate the associated waste management efficiencies for Residual, Plastic, Swill, Paper, and International Catering Waste (CAT1), which have the biggest influence on operational resource streams. These results provide airports with a foundation for strategic planning and enable them to evaluate their progress toward sustainable waste management and CE transitions, also offering a benchmark for continuous monitoring.

Wrapping up, both method-oriented contributions and case-based research are needed to advance the adoption of CE in organizations. This collection of articles represents only a first step toward a further effort in addressing this key aspect related to the CE transition both inside and outside manufacturing. In addition, best practices developed per specific industries could be applied with a cross-sectional perspective, fostering cross-fertilization dynamics and triggering innovative practices in different unusual contexts.

Author contributions

CS: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships

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