



Editorial overview: The fashion industry wears the circular economy and sustainability

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With ever-growing attention, extensive research has shown how practices in the global fashion industry have become a major constraint to achieving sustainability. Several issues associated with this sector have been highlighted including unsustainable use of natural resources, unethical labor practices, greenhouse emissions, and post-consumption waste generation. Additionally, clothing consumption has increased rapidly due to the fast-fashion phenomenon, which encourages the purchase-discard model. The overproduction/overconsumption of garments has been linked to many environmental problems such as being responsible for 8–10% of global emissions of CO₂ and being a big water consumer, reaching 93 billion cubic meters annually. Accordingly, the fashion industry is considered unsustainable and, as a response, several alternatives for transforming its practices into more environmentally friendly and socially responsible ways have emerged in the last decades. Among these alternatives lies the circular economy (CE), which represents a sustainable pathway to growth, providing the economic system with an alternative cyclical flow model.

To implement CE principles in the fashion industry, an innovative eco-design strategy is a prerequisite for not only improving some specific phases of a product's life cycle but rather offering a holistic solution. In line with this purpose, green chemistry (GC) offers an approach for the design of chemical products and processes aimed at maximizing resource efficiency and minimizing hazardous effects throughout the products' life cycle. Along with improved protection for health and the environment, GC can make economic sense by decreasing the costs associated with waste disposal, protective equipment, regulatory compliance, liability, and manufacturing security, as well as other societal costs. Against this background, this special issue presents the current trends of GC applications in the fashion industry from different stakeholder perspectives to promote a sustainable transition.

The present issue “Promoting sustainable chemistry for a circular fashion Industry: the role of consumers, producers and policy-makers” includes 12 peer-reviewed review articles. The multidisciplinary and complex nature of the topic is highly reflected in the keywords used: a total number of 52 diverse keywords have been listed. Among others, the circular economy appears 5 times, followed by sustainability 3 times and then we find

apparel industry. From a triple bottom line perspective, they provide a comprehensive **list of practices** to enhance the economic, social, and environmental sustainability of apparel firms.

Clark (<https://www.sciencedirect.com/science/article/pii/S2452223622000979>) looks at the importance of green chemistry in the course of the circular fashion industry with a specific focus on the compatibility of the recycling industry but also the opportunities for **waste valorisation**.

Ikram (<https://www.sciencedirect.com/science/article/pii/S2452223622000694>) proposes a model to gain a deeper understanding of how **technological innovations** help achieve a successfully sustainable fashion, while simultaneously improving sustainability practices.

Papamichael *et al.* (<https://www.sciencedirect.com/science/article/pii/S2452223622000505>) emphasize the necessity of **developing a new business circular model** for the fashion industry in the framework of **waste management** to promote circularity to both consumers and businesses, through knowledge exchange and education.

Tsironis and Tsagarakis (<https://www.sciencedirect.com/science/article/pii/S2452223623000585>) discuss the circular economy perception in the apparel, fashion, and textiles industry sectors from the **perspective of social media** by investigating the LinkedIn profiles of companies. They underline the potential of rapid social media assessments to monitor recent trends such as circular economy to catch the early signs of necessary policy fine-tuning.

Finally, we present some case studies related to the promotion of sustainable chemistry. Nayak *et al.* (<https://www.sciencedirect.com/science/article/pii/S245222362200092X>)

highlight the potential of digital laser technology and waterless ozone technology to promote sustainable chemistry by reducing environmental impacts in **denim manufacturing**. Sultana *et al.* (<https://www.sciencedirect.com/science/article/pii/S2452223622001365>), on the other hand, report the gaps that helped to propose the roles of consumers, producers, and policymakers in making **sustainable leather processing**.

This special issue highlights how the scientific literature calls for major changes in the fashion industry by identifying points of contact between the worlds of production and consumption. Sustainable Development Goal 12 pushes toward such a balance, and policy choices can aim to support the green and circular transition of the industry's engaged businesses as well as to support information campaigns to stimulate change in consumer habits. Likewise, it is necessary to generate or integrate professional figures to reap the benefits of this green transition, which represents a great opportunity to realize a civil society, in which everyone can wear sustainable clothes.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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