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***The role of bottom-up influence in circular fashion business models.
Experiences from participatory research in Hungary***

One of the aims of this article is to illustrate the four types of circular visions, their interconnections and limitations, using examples. Although the visions (planned circularity, circular modernism, bottom-up sufficiency, peer to peer circularity) can be observed in other industries, they can be understood through the examples of the fashion industry in Hungary. By looking at the interconnections, it can be understood that none of these visions will be a solution, and that their interconnections should be used consciously. Further, the aim is to present circular solutions for the fashion industry. This is significant partly because, in addition to its direct environmental impact, the fashion industry has a very important awareness-raising effect, bringing circular solutions to several consumer groups that are not interested in environmentally conscious solutions.

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Environmental impacts of the fashion industry

To the best of our knowledge, without renewing the resource structure of economic growth, climate change will continue to accelerate and, as a result, the associated economic damage will continue to increase (Holcziinger & Sárvári, 2025). Changing the unsustainable logic of the global economy (Nassar et al. 2024), including the fashion industry, is one of the most important challenges of our time. The constantly and rapidly changing climate and the tensions arising from growing inequalities make the responsibility of all economic actors clear. There were also high expectations that COVID would bring positive change on sustainability issues, but recent research shows that while there are temporary and partial results, no significant change has been achieved (Erdeiné Késmárki-Gally, & Kiss 2022; Varga & Csiszárík-Kocsir, 2024a, 2024b). The practical implementation of a concept of sustainability that is essentially macro-level and initially mainly linked to the environment requires interventions and conscious actions at both micro and meso levels, as the actions and impacts of actors are far from independent and determine each other's potential (Szeberényi, 2021, Borzán, & Szekeres 2023). Nevertheless, the responsibilities of the different levels and actors are typically treated separately (Körtvési, 2021). Thus, the theory and practice of Corporate Social Responsibility (CSR) (Carroll, 2008), later Environmental, Social and Governance (ESG) approach (Hardyment, 2024) and the concept of corporate greening (Harangozo, 2008; Dombi et al, 2025) on the corporate side and the expectation of conscious and responsible consumption on the consumer side (Csutora et al., 2022) have been formulated. The fashion industry is one of the most important industries with a long supply chain, which, in addition to its complexity, is also one of the most polluting industries in the world with the fourth largest negative impact on the environment and climate change in the global life cycle, and the third largest negative impact on water and land use. According to the EU Strategy for a Sustainable and Circular Textile Industry (COM (2022)141), global textile production almost doubled between 2000 and 2015 and is expected to grow at a similar rate by 2030. In the EU, the use of textile products (largely imported) currently has on average, while around 5.8 million tonnes of textiles are discarded each year, or around 11 kg per person, and globally, one truckload of textiles is dumped or incinerated every second (EURATEX, 2020).

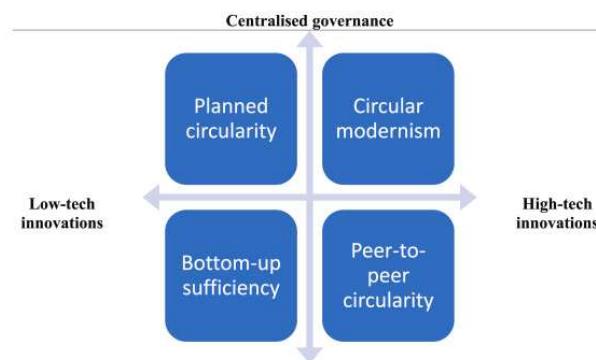
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Circular models in the fashion industry

According to Jia et al (2020), much of the research focuses on the link between environmental sustainability and the circular economy, to the detriment of social sustainability (Szeberényi et al., 2024; Vágány – Erdei Késmárki-Gally, 2024). This is important because, in addition to environmental pressures, the fashion industry is associated with a number of social problems, such as child and forced labour (Bailey et al., 2022). Moreover, social concerns are linked to consumer's attitudes towards sustainability. Niero et al. (2017) also emphasise environmental issues in relation to eco-efficient circular models but also point to the importance of social determinants and consumer behaviour. Molina and Pascua (2022) also focus on the environmental impact but point to the role of consumers in ensuring that products are used as much as possible before being returned to the production cycle or even passed on to other consumers. Based on interviews conducted with owners and managers of sustainable fashion SMEs, the authors concluded that although sustainability, CSR, and business ethics are intertwined and often interpreted as synonyms, circularity does not feature prominently (Szegedi et al. 2023).

Among other things, a shift to a circular economy can address these environmental and social dilemmas and thus offer a great opportunity to achieve sustainability goals in this area. Much of the contemporary literature on the circular economy presents the transition as a simple, neutral process, implicitly characterised by techno-optimism and eco-modernism. Therefore, most research on the circular economy focuses on the practical and technical level, looking at the material and energy flows of production-consumption systems. However, the underlying worldview assumptions are largely ignored (Lowe & Genovese, 2022), and some of the professional disagreements on circularity have been attributed to the fact that the generic term circularity has been used to mean whatever all actors wanted it to mean. A positive example of attempts at definition is the research by Bowens et al. (2020), which develops four scenarios for the future of the circular economy along two dimensions. One of the dimensions examined is the degree of technical innovation and the other is the question of centralisation, on the basis of which four visions of the future were formulated (Figure 1).

Figure 1: Circular visions



Source: own ed. based on Bowens et al (2020)

1. In the vision of the '*planned circularity*', the transition is centrally managed by the government with strong coercive measures (taxes, bans, mandatory repair), which can affect producers, consumers, the whole supply chain and state actors.
2. The vision of '*circular modernism*' focuses on technological innovation and market forces, and is characterised by the decoupling of resource use and carbon emissions from human development. In this scenario, the circular transition is compatible with the

concept of "green growth", does not question the focus on growth and the capitalist model. Basically, this approach is about corporate innovation and its impact.

3. The vision of "*bottom-up sufficiency*" focuses on small-scale, local circular solutions, based on individual consumer, life choices, possibly with the second hand clothing shop as a company as an intermediary.
4. The vision of a 'peer to peer circularity' is characterised by a focus on technologies that enable collaboration, such as the emergence of internet platforms

In addition to its important sustainability aspects, the fashion industry also has an important social interest and appeal to young people, so circular visions can have a greater impact in this area. Furthermore, innovative, sustainability-focused business models and practices in the sector tend to be implemented by micro and small enterprises with higher probability (Edőcsény & Harangozó, 2021, Győri et al, 2025), thus adding further benefits for the society.

At the same time, besides the positive environmental and social outcomes, Matthews and Hodges (2015) have some concerns, based on their own research and the limited amount of previous research on similar topics. They investigated the perspective of consumer motivations and behaviour, and argue that consumers participate in such programmes primarily for self-interest, to get rid of useless clothes and to acquire new, unique, even branded clothes, and even hedonic motivations, such as meeting, eating and drinking with other participants, also appear. Interestingly, the environmental dimension hardly ever appeared among the people they interviewed.

After these experiences and expectations, we should realize that in the present, the four basic types of circularity coexist, build on each other and are interconnected. This will be illustrated by a few examples from Hungary.

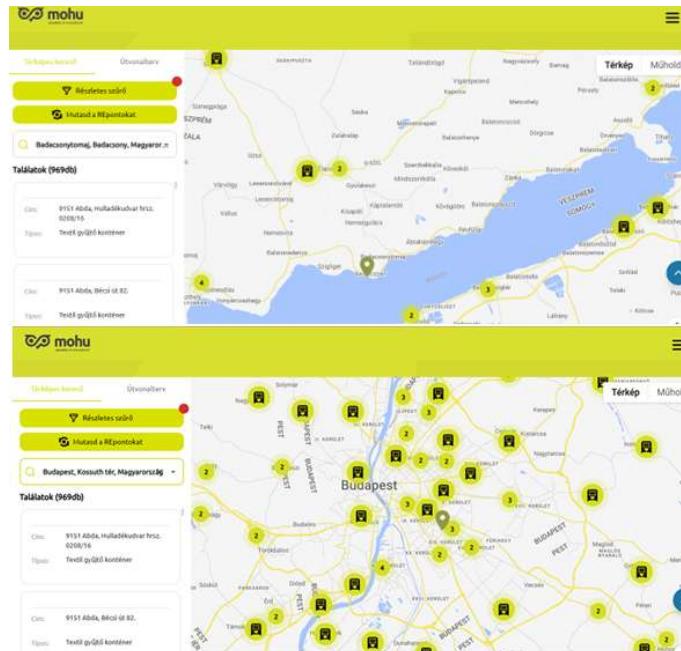
Planned cycles in the fashion industry

According to the amendment of the European Union Waste Framework Directive (Directive 2008/98/EC, Directive 2018/851/EU), Member States have to set up a separate collection system for textile materials by 1 January 2025. From 1 April 2024, waste management in Budapest and the agglomeration is carried out by MOHU BUDAPEST Zrt. According to their website, thousands of textile collection containers are available nationwide, which MOHU has installed in waste yards, at retail outlets (e.g. Tesco, Metro), schools and public areas. These new tamper-proof containers can collect 150-250 kilograms of textiles. Browsing through their map search (<https://mohu.hu/hu/terkepes-kereso>), the problem is that while there are many selective containers in the central districts of Budapest (especially on the Pest side), there are none at Lake Balaton, for example, between Keszhely and Balatonfüred and a lot of other territories of Hungary (photo 1).

According to the company's website, the collected textiles are sent to a sorting centre, where they are first sorted into two main categories to determine whether they can be reused as clothing or machine cloth, or recycled as textile raw material. In the case of reusable clothing, a multi-stage sorting process decides which further categories the material can be placed in according to the type of use (e.g. jacket or shirt) and quality condition - a total of 400 categories are distinguished by the end of the process. The best-rated products are then sold in European second-hand shops. The amount of work that goes into the sorting process every day is illustrated by the fact that, on average, 1 person decides on the fate of 2-3 tonnes of clothes a day. All other textile or clothing waste that cannot be classified in the wearable categories can be recycled for energy recovery.

The legislation outlined here will primarily affect waste managers and consumers, but other elements of the strategy, such as the plan to marginalise fast fashion, will also have a significant impact on producers and traders.

Photo 1: textile collection containers according to the MOHU map search



Circular modernism

Market mechanisms can support the collection and recycling of textile waste, in addition to central requirements in legislation.

In Hungary, several companies are also engaged in sorting and recycling textile waste, such as Textrade Ltd. (Székesfehérvár), Temaforg Ltd. (Kunszentmiklós) and Tesa Ltd. (Mohács). Their activities are characterised by the procurement of textile waste (not necessarily from within Hungary), sorting, sale and recycling. Clothes suitable for reuse are returned to the cycle in a variety of forms, while others are used as machine cloth. In the textile recycling activity Textrade Ltd produces and sells wool, acrylic, cotton, wool-synthetic elementary fibre decomposable materials in bales of 400-500 kg. Temaforg Ltd. produces felt, upholstery and side upholstery materials for upholstered furniture from 100% recycled fibre. Tesa Ltd. produces, among other things, carpet base material for carpets and treading material for horse tracks. The use of this additive, according to the company, results in a more flexible, uniform, well-structured soil, absorbs moisture in case of high rainfall, requires less watering in case of drought due to the stored moisture, prevents dust formation, reduces the need for track maintenance - the track can be ridden earlier in spring and longer in autumn. This additive has been used in the construction of over 400 racecourses. The growing relevance of circular economic models across sectors highlights the importance of integrating material reuse and waste reduction strategies into broader sustainability frameworks (Macher, 2022a).

Bottom-up sufficiency

This vision is characterised by a personal approach and the search for individual solutions, which can be summarised as clothing swaps, clothing repair workshops organised for environmental or social purposes by members of the local community, friendship groups, schools or NGOs. There are many different types, the organisation always adapts to the possibilities and expectations of the community. At the Budapest Metropolitan University, it has become a tradition to organise a costume swap every semester, which is accompanied by creative workshops. In the ÖKOSIKK

event (photo 2), green NGOs and three restaurants launched the wardrobe exchange in the autumn of 2019 in the small town in the county's capital. People can bring up to 10 pieces of summer, temporary clothing per person. These can be women's, men's and children's clothes in perfect condition. The clothes can be exchanged or consumed, even for a cup of coffee, which can also be exchanged for clothes at the wardrobe exchange. For the sake of controllability, the gesture of purchase is kept, only the money is excluded from the circulation. Another way to show your appreciation is to give a cap for every piece of clothing you bring to the Ecoshop, as a "payment" for a new item. Typically, a clothing exchange is organised every season, and over the years, more catering establishments have joined in.

Photo 2: ÖKOSIKK in Győr



Source: ÖKOSIKK in the city centre Facebook page

Sometimes the new arrivals can't even unload their clothes, someone has already taken them from their hands. Community donations are used to get hangers, more people come to help with unloading and sorting. There is an extremely diverse range of participants, from local pensioners, large families, passing guests and holiday homeowners. There are also return visitors every year. Participants are usually ladies, often with family or friends. These kinds of grassroots initiatives reflect the increasing societal engagement in sustainability and demonstrate how local-level actions can contribute meaningfully to systemic transitions (Macher, 2022b)

This vision also includes donation bots, second-hand shops and market stalls. These connect surplus fashion items with environmentally or socially deprived or "treasure-hunting" consumer groups, usually at very reduced prices.

A peer-to-peer circularity

The exchange described in the previous point has both the advantage and the limitation of being local, only those physically present can participate. Therefore, physical exchange venues are becoming increasingly virtual. For example, in addition to the Háda shops selling useful clothes, there is now an online webshop, too. There are also online platforms where the seller and the buyer meet directly (e.g. Vinted) and solutions where the platform acts as an intermediary (e.g. Remix). The former gives the seller more room for manoeuvre but requires attention, while the latter places almost all the burden and risk (with a significant part of the profit as well) on the platform. Dekhili et al. (2025) also point out the downsides of Vinted and similar platforms: because of the low prices, they don't replace existing demand, they create new demand, moreover shipping and returning of packages add to the environmental impact. Furthermore, Vinted can also lead to

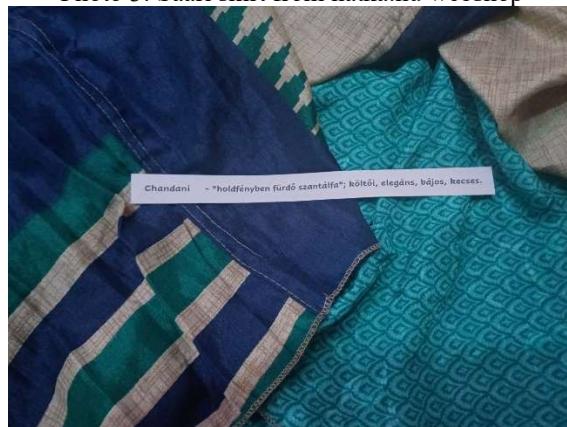
psychological addiction, as many people browse the vast number of available ads without any real purpose, often spending several hours a day doing so.

On the other hand, online craft marketplaces (e.g. Meska) are increasingly featuring more and more makers with "zero waste" products. Examples include unique jewellery designed from coffee capsules, used cutlery or plastic bottles.

Traditional online stores are often linked to Facebook groups, which provide a secondary market for the (recycled) products purchased. Here, this is illustrated by the example of double-layered flat skirts, made of recycled saris, which are marketed as socially and environmentally responsible products. India has a population approaching one and a half billion. Millions of women there wear saris as everyday wear and tons of textiles, often in perfectly good condition, end up in landfills. The sari skirts are made from such carefully selected, second-hand Indian saris. The skirts are made by Indian seamstresses, providing them with employment and a livelihood. Each skirt is unique and varies greatly in fabric and pattern, so buying them live from an online store (e.g. saarika.hu or hatka.hu) may not be to the customer's liking, in which case they are often sold in related Facebook groups instead of being returned. Sometimes the customer likes one side of the skirt but not the other, so the need to dismantle the skirt and pair it with a more harmonious skirt quickly arises. The name of this group became 'Frankenskirt', a combination of the words Frankenstein and skirt. The motivation for participation in such groups is interesting. In addition to cultural and sustainability community-building considerations, there is a strong business spirit, and a significant secondary (or tertiary) market for skirts is developing, where a group of "grey traders" seeking to evade taxes is also appearing. At the same time, it is clear that local communities play a decisive role in the entrepreneurial ecosystem (Kolnhoffer et al. 2024).

If we look at the direct environmental impact of these solutions, it quickly becomes apparent that skirts that travel thousands of kilometres are unlikely to be a meaningful solution to the waste problem. However, they can help the non-violent transition to slow fashion, they can bring into fashion that there is life beyond fast fashion, that individuality and creativity can play a significant role in fashion as opposed to uniformity. Skirts are personalised and given a name, thus expressing their uniqueness and value (photo 3).

Photo 3: Saari skirt from hatka.hu webshop



Shoppers will often spend several times the price of a fast fashion store on a second-hand, but unique skirt.

Participatory research

Our initiative and its background, described in detail in a previous article (Szigeti et al. 2022), is briefly summarised and updated here.

Participatory research is an important methodological approach that actively involves community members or stakeholders throughout the research process, rather than simply treating them as research subjects (Duea et al., 2022). This collaboration increases the relevance and applicability

of research findings, as they are based on real experiences and community needs (Guillemot et al., 2023; Mthembu et al., 2023). By incorporating different perspectives, participatory research can lead to more effective interventions and solutions based on local knowledge and priorities (Mthembu et al., 2023). This is recognized as a key process for improving the identification, translation, and real-world application of research priorities, which has the potential to reduce inequalities (Han et al., 2021).

In addition, participatory approaches promote community empowerment by giving voice to those affected by the research and allowing them to take responsibility for the results (Vlegel-Brouwer et al., 2023). This methodology promotes mutual learning and respect, valuing participants' experiences as legitimate forms of knowledge that influence practice (Emke et al., 2024). Such engagement improves the quality of research at all stages, from defining relevant questions to developing methods that encourage participation and retention (Barar & Jayaweera, 2025). Ultimately, it can facilitate social change and contribute to solving complex sustainability problems by promoting collective knowledge production and empowering marginalized communities (Millar et al., 2024; Tribaldos et al., 2020). This approach is becoming increasingly popular, with some institutions requiring stakeholder involvement as a condition for funding (Duea et al., 2022). Interest in collaboration in the research process is also growing among patients and the public (Duea et al., 2022). This is especially true for individuals with personal experience, such as patients and caregivers, who have invaluable insight into the conditions being studied (Rojas-Rozo et al., 2024).

For the first time, we organised a clothes exchange - as a circular event - in Balatonakarattyá in the summer of 2020, in collaboration with some friends, to raise awareness on Overshoot Day. In the summers of 2021 and 2022, we organised four exchanges, not only of clothes, but also of trinkets and books. The events continued in the same way in 2023 and 2024. We usually organise them on Saturday mornings, in several places at once, in the gardens of private houses. Some of the participants are also involved in the organization. Some offer unnecessary hangers and clothes racks. Others copy flyers or help with packing and displaying clothes. A significant proportion of those participating in the clothing swap are women, with men mainly attending as companions. The majority of the clothing is women's and children's clothing.

The main reason for organising clothing swaps is that there is no clothing shop in the municipality, so any clothing you need can be obtained from another municipality or ordered online. There is neither a container for collecting clothes in the municipality, so there is no separate collection of good quality textile waste. Unfortunately, the obligation to collect textile waste separately did not help the situation, as there are no separate containers for textile collection near Balatonakarattyá. Although the basic idea came from the Ökosíkk event in Győr, businesses are not participating in the exchange here. As no businesses are participating in the Balatonakarattyá exchange, the rules had to be changed. Only 5 pieces can be brought and taken by the interested person. With this quantity limit we want to prevent that we accumulate a large amount of stock. If you don't find the clothes you like, we will give you "local money" to use at another location or at the next swap. We have strict quality criteria here too: we ask that everyone brings clothes that are clean, unblemished and ready to wear. Thus, these events are emphatically not for the purpose of scrapping, but to provide an opportunity for a quality exchange, to contribute to community building, to get to know each other and to make new friends. We advertise the events in social media, in municipal and thematic groups and interested people can also find out about them in VEOL's news (news portal of Veszprém County) from Balatonakarattyá. We think it is important to keep the programmes fun and family-friendly, so we do not encourage people to come from far away. Occasionally, 20-60 people turn up at a venue, which means that at least 100 items of clothing change hands. The opening set of the exchanges are the leftover clothes from the previous exchange, these will be kept and the next time this opening set will be the first to arrive. At the end of the summer season, we sort through the leftovers and offer most of them for free via social media, with a smaller portion waiting for next summer's swap. The opening stock is exchanged

very quickly on a one-off basis. Often we even receive clothes with store labels that have never been worn.

We asked 69 participants when they consider an exchange to be successful. We processed the answers using the word cloud method. The Figure 2. shows that this is much more of a community experience than a conscious action related to sustainability.

Figure 2. As an organizer, when would you consider an exchange to be successful?



Respondents said that Covid had caused them to shift toward online shopping, delivery, and avoiding crowds, which is not conducive to circular solutions (Figure 3.)

Figure 3. Have consumer habits changed due to COVID?



Conclusion

As can be seen from the examples presented, all four circular visions can be found in Hungary, but they are not really connected within or between the different types. There are corporate and consumer initiatives, each with advantages and disadvantages, but the biggest problem is that they operate in virtual isolation. This means that they cannot build on each other or learn from each other's mistakes.

In line with the literature, we also found individual motivations alongside a commitment to sustainability, which manifest themselves as profit motives in the case of businesses and as a search for personal benefit in the case of individuals. This is not a problem; it may even be the most effective incentive, as we consider environmental, social, and self-interest motives at the same time.

For consumers participating in clothing swaps, such events are more of a community experience and less of a conscious sustainability action.

Further research is needed to identify possible links between programs at different levels, as well as stakeholders who could achieve these links in practice.

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