Mapping practices, initiatives and policies around the circular economy and emerging services in the retail sector

Introduction

The circular economy is a model for sustainability in production and consumption, by which national governments, social partners and international development institutions are seeking to move away from an extract—manufacture—use—discard model, towards solutions to the environmental crisis of our time. The circular economy can be seen as the most recent attempt to intertwine growth imperatives with environmentalism in a sustainable way (Anantharaman 2021).

The circular economy embraces activities in reuse, repair, refurbishment, rental and recycling. Social and labour considerations are not always integrated in the planning and implementation of circular activities; many of these activities may therefore result in decent work deficits, especially where informality prevails. To transition to a circular economy, the principles of decent work and social justice must be embedded in circular policies, to address inequalities.

While the concept of the circular economy has gained momentum over recent years, it has a longer history, particularly in economic and ecological spheres (Murray, Skene and Haynes 2017, 372). Various circulation models were widespread in the economy in the past, and are today considered sensible by an even wider variety of communities across the world (Isenhour and Reno 2019).

Circular economy practices have the potential to contribute directly to achieving several of the environmental and economic Sustainable Development Goals (SDGs) under the United Nations 2030 Agenda for Sustainable Development, as well as the climate targets under the 2015 Paris Agreement (Schröder et al. 2018; Schröder 2020). Several regions and countries are therefore putting circularity and sustainable consumption and production at the centre of their policy efforts, including countries in Latin America (Chile and Colombia), Asia (China and Viet Nam), Africa (Rwanda, and South Africa) and the European Union. The latter launched its circular economy action plan in 2020, and several European countries have developed national frameworks on circularity (UNEP 2021a).
Scope

This paper will focus on the decent work aspects of circular jobs by looking at established and emerging circular business models in the retail sector (notably repair, resale, rental and reuse) in three areas: clothing, electrical and electronic equipment, and food. These industries have been chosen for two reasons. First, current operating models in these industries are extremely wasteful\(^1\), with serious impacts on the environment. It is therefore vital to reconsider their production and consumption patterns through the lens of new retail sector models. Second, while the application of some aspects of the circular economy in the production segment of supply chains has been researched extensively, there are very few studies on circular applications in the distribution and retail segment. This paper is an attempt to “start the conversation” and fill this gap by focusing both on the decent work opportunities and on the challenges posed by emerging circular models in the retail sector.

What is in the name?

While there is ongoing debate among scientists about the exact meaning of the term “circular economy” (Kircherr, Reike and Hekkert 2017; Henry, Schraven et al. 2021), most interpretations share a focus on increased resource efficiency, waste management and decoupling resource extraction from economic output (Laubinger, Lanzi and Chateau 2020). To that end, it is key to ensure that products, components, and materials are kept at their maximum value for as long as possible. According to one of the most often cited definitions, there are two main strategies for increasing circularity: regenerating biotic materials; and maintaining the value of abiotic materials for as long as possible (see figure 1). Processes to achieve these two strategies include:

- closing resource loops (improving activities for sorting and recycling);
- slowing resource loops (extending product lifespans through resale, repair and rental services); and
- narrowing resource flows (boosting material efficiency, using fewer resources, for example through “product as a service” business models).

\(^1\) 92 million tonnes of textiles are wasted per year, while 1.3 billion tonnes of food, one third of the food produced globally for human consumption, is lost or wasted. At the same time, electrical and electronic equipment is one of the fastest growing waste streams, predicted to reach 75 million tonnes by 2030.
Rationale behind the use of circular economy model

While resource efficiency is an important aspect of the circular economy concept, innovation and competition are also crucial in circular adoption. The circular economy also promotes the development of new business models and design standards for products tailored for repair, durability, and reuse.

A key element of assessing circular business models includes non-financial value creation, in particular positive environmental impact. There are several motivations (material and non-material) that drive companies to build circular business models, and while most of the non-material driving forces notably revolve around environmental issues (Elander, Watson and Gylling 2017), existing circular business models tend to have low – or no – social ambition (Suarez-Visbal et al, 2022).

One concept underpinning the circular economy is to dematerialize consumption by accelerating the shift from an economy based on manufacturing to one based on services. This presents opportunities for regions that already have a strong services sector, and for lower-income countries that are, in many ways, more “circular” in terms of resource management and consumption practices than their developed economy counterparts (Preston and Lehne 2017).

While the shift may result in new jobs and opportunities for enterprise development, this transformation may also create tensions in economies that largely depend on capital-intensive production. It is therefore essential to ensure that the transition to a circular economy is a just transition, fully taking into account the social implications of economic restructuring, with a particular focus on social justice, decent work promotion, poverty elimination and inequality reduction as laid out in the ILO Guidelines for a just transition towards environmentally sustainable economies and societies for all (Just Transition Guidelines) and the ILO Centenary Declaration for the Future of Work.

Circular economy labour market implications

The transition to a circular economy would have a positive impact on the labour market, particularly for the retail sector. According to ILO projections, employment would grow by 0.1% by 2030, meaning that 6 million more jobs would be created in an economy with circular strategies. The circular economy would stimulate employment growth in labour-intensive sectors, such as services and waste management (around 50 and 46 million jobs, respectively), although it would also cause employment losses in capital-intensive and extractive sectors, such as mining and manufacturing (around 50 and 60 million jobs, respectively) (ILO 2018a, 52).

Employment would be expected to increase by 21.5 million jobs in the retail, trade and repair of personal and household goods. Restructuring of the economy and reallocation of labour will impact different regions in different ways. While employment growth is expected in Europe and in Latin America and the Caribbean, employment losses are predicted in Africa, Asia and the Pacific, and the Middle East, unless measures are taken to diversify the economy (ILO 2018a, 52–53). These, however, are only rough predictions; comprehensive evidence of the general and sectoral employment effects of transitioning to a circular economy remain scant, since necessary parameters, indicators and standardized monitoring mechanisms have yet to be established, owing to the aforementioned lack of a commonly accepted definition of the term “circular economy” (Laubinger et al 2020, 11).

Consideration of the labour implications of the transition to a circular economy should include the number of jobs (in terms of creation, substitution or replacement), and the quality and decent work dimensions of future circular jobs. Currently, circular jobs are not intrinsically better than traditional jobs in terms of working conditions, social security or access to rights. Recent trends show that such a transition could lead to a higher share of insecure forms of employment in the absence of an adequate policy and legal framework. This may repeat the patterns prevalent in the traditional wholesale and retail trades, which have

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2 ILO projections are based on the presumption that the global temperature rise will be kept below the 2°C ceiling set in the Paris agreement on Climate Change.

3 Another ILO prediction goes even further, projecting that a net total of 7 to 8 million new jobs will be created by 2030. The extrapolation of these estimates shows that in a circular economy scenario, nearly 78 million jobs would be created and almost 71 million lost (ILO 2019c).
high levels of vulnerability and insecure forms of employment (ILO 2018b, 33).

Overall, women’s share of employment in the services sector is higher than men’s (ILO 2017, 7). In a circular economy scenario, the proportion of women employed in the sector would continue to rise, calling for a renewed focus on action to promote gender equality in new retail sector models.
Mapping the characteristics of circular business models in the retail clothing sector

Key points

- Resale, access-based business models, and repair are the most established and most promising circular business models in the retail clothing sector, with significant employment creation opportunities.
- Gender inequalities and decent work deficits persist in rental and resale jobs.
- The second-hand market for clothes in the global South is part of the informal economy with several decent work challenges.

Skills relevant to circular economy jobs are lacking, including those related to tailoring required for repair, remanufacture, resale and rental.

Skills development is a prerequisite for achieving long-term change in retail clothing.

Cultural and social contexts need to be taken into account when designing a shift from ownership-based models to access-based models.

Relevant literature on the topic contains numerous definitions, descriptions and characterizations of circular business models in the textile sector. These generally centres on the creation of added value during, or after, the “use” phase of textile products. Unlike the linear economy, circular business models aim to exploit value by maintaining or restoring the function of textile products for as long as possible. As in other sectors, circular models for clothing businesses tend to lack social considerations. The most recent EU Strategy for Sustainable and Circular Textiles (2022) was criticized by several civil society groups, which expressed concern that “the much-anticipated text misses out key human rights aspects from its focus. With environmental and social sustainability being two sides of the same coin, it is a missed opportunity that a chapter of the EU Strategy for Sustainable and Circular Textiles seems to have been lost.”

While there are many ways to classify business models for textiles in relation to their approach towards circularity, most classifications include the principles, approaches, and circular business clusters outlined below, which are particularly relevant to the retail segment of the textile supply chain.

- Longevity and durability: selling durable products, offering maintenance and repair services to customers. Maintenance and repair services can be offered by textile producers and brands, or other actors.
- Access-based models: “product as a service”, renting and leasing (business-to-business or business-to-consumer) or sharing (mainly consumer to consumer). In these models, the textile products remain the property and responsibility of the company running the system, while the customer pays for access to their use. This could include one-time rental, subscription and leasing models.
- Textile collection and resale: business models related to resale focus on extending the useful life of textiles beyond the first user. This can include traditional bricks-and-mortar stores (sometimes run by NGOs), vintage and second-hand shops, and business-to-consumer and consumer-to-consumer platforms.

Resale

Resale is regarded as the most consolidated product life extension strategy. With the rise of the circular economy agenda, attention to second-hand consumption and enterprises has increased. It is worth emphasizing,
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However, that there is nothing new about the circulation and exchange of a wider range of second-hand goods, including textiles: the history of second-hand economies paralleled and overlapped general economic exchanges for centuries. What is most notable about contemporary trading in second-hand goods its vast scale (Hansen and Le Zotte 2019). Today, second-hand textile resale can take many forms. Several are described below.

Own product take-back and resale

Resale can be organized by the companies that made the original sales. These are own-branded operated business models, facilitated through third-party online or physical platforms. Traditional fashion brands, including Inditex and H&M Group, have launched various circular fashion initiatives, mainly in the form of take-back programmes and the use of recycled materials. This business strategy often includes a cleaning and refurbishing stage, which can either be performed internally or outsourced to enterprises.

Take-back programmes are often criticized as they usually offer incentives or discounts on new products, thus reproducing the “take–and–make–waste” model. Furthermore, in the case of resale, many brands are simply bring their return stream online. These are items returned by consumers within the 30-day window of the returns policy, which may or may not have been worn (Martin 2022). Patagonia’s programme stands out from numerous other take-back programmes as it comprises a holistic circularity programme called Worn Wear, which includes take-back, repair, resale, and recycling. The programme’s website, www.wornwear.com, is an independently managed site where customers can shop for used items. Patagonia clothes are shipped, aggregated, and sorted for repair and resale at a large hub in Reno, Nevada. If a garment is beyond repair, Patagonia’s team identifies the best recycling solution. Other, third-party resale models are offered by online platforms, encouraging consumers to send-in their clothing for it to be resold on the platform, while gaining credits or discounts to buy other, second-hand garments from the same website.

General collection and resale

A company or brand collects textile products regardless of who made the original sale. The collection is based on consumers returning the products, primarily through in-store collection. Often, used textiles are collected regardless of condition, and can be worn out and damaged. The collection usually takes place through a collection partner – either a charity or a business – which sells the textiles on global markets for reuse and recycling. The resale of municipally collected textiles in Europe, for example, is usually run by commercial and charitable organizations that drop off the textiles to a textile sorter where wearable garments are separated from the non-wearables, and are usually then sold locally or in international markets.

Two-thirds of collected used clothing is commercially exported for reuse to low- and middle-income countries. While the idea may be to promote growing markets and support livelihoods in those countries, such practices can also affect local retail development. Some countries in East Africa, for example, are considering blocking imports of second-hand textiles, owing to concerns that these imports undermine the development of the domestic clothing sector. Nevertheless, studies of the trade across Africa have also shown that importing, trading, retailing, washing, repairing and altering second-hand clothes provide significant opportunities for employment in local secondary markets. These opportunities, however, are predominantly in the informal economy. In Kenya for example, the second-hand clothing market may employ anywhere between 10,000 and hundreds of thousands of people (Preston and Lehne 2017, 9, UNEP 2020, 36).

Since the trade in second-hand clothing mainly takes place in the informal economy, it is difficult to calculate exact number, though researchers and officials suggest it may be in the hundreds of thousands. https://www.reuters.com/article/us-kenya-textiles/the-global-business-of-secondhand-clothes-thrives-in-kenya-idUSKCN0I41DS20141015. Accessed 14 April 2023.
The value of the global trade in second-hand clothing has been steadily rising (Norris 2015, 184). The highest quality winter clothing is sorted for markets in Eastern Europe, good summer clothing is sold to African markets, while the lowest quality is shipped to South Asia to be sold to the very poor. The top five exporters are the United States, United Kingdom, Germany, Republic of Korea and Belgium, and the top five importers were the Russian Federation, Pakistan, Malaysia, Ukraine and India, with significant re-export hubs in every continent (Norris 2015, 184). While a large proportion of second-hand, imported clothes end up across Africa, as much as 40 per cent of them are imported in bulk, packed in bales, declared unwearable and unsaleable, and consigned to landfill (Warner, Bingham and Ohui Nartey 2021,16).

**Booming resale market?**

Before the COVID-19 pandemic, there was a significant increase in the apparel resale market, which grew by 49% between 2017 and 2018. Studies indicate that second-hand goods commerce in retro shops, flea markets, vintage boutiques and online is expanding in the Global North and it is no longer associated with poverty and low status. Rather, it is argued that recent interest in second-hand and reuse concerns the meaningfulness of circulation in social life (Appelgren and Bohlin 2015). Furthermore, such trends highlight a shift from a niche business to opportunities for more scalable enterprises. The rise of interest toward second-hand textile goods led to the emergence of major online second-hand retailers and thrift stores such as ThredUP, The RealReal, Poshmark, Vestiaire Collective, Depop.

Textile imports to India are restricted by high tariffs to protect India’s indigenous garment sector, which produces clothing both for local and export markets. Still, imported second-hand clothes can be found all over India as traders and dealers negotiate and operate between legal and illegal commodity flows, and formal and informal economies (Norris 2015, 187). In India, wearing new clothes is a status marker for upper and upper-middle class families, who only wear pre-used clothing from immediate family members. Giving and receiving of older garments creates hierarchical social relationships, dividing the “higher” giver from the “lower” recipient (Norris 2010, 8). Among middle class Indian families, old clothing used to be passed on to younger, poorer relatives or servants. While lower class men use imported second-hand Western clothing, available at affordable prices, there is also a thriving second-hand market for local Indian clothing, which supplies poorer women who are still expected to wear traditional clothing, such as saris and shalwar kamiz (Norris 2010; Norris 2015).

**The Clothing Bank – South Africa**

South Africa – Johannesburg, Cape Town and Durban.

The clothing bank has established a partnership with South Africa’s top retail companies, who donate their excess stock. The bank sells this inventory at significantly discounted prices to women, who quickly start their own small business, while at the same time participating in extensive training. The clothing bank created a two-year training programme, which includes mentorship and developing technical and business skills. “By working with South Africa’s major retailers and manufacturers we divert excess stock (customer returns, end-of-season products, overruns) to our branches nationally, where items are sorted and debranded. Unemployed individuals with an entrepreneurial spirit join our holistic enterprise development programmes and learn how to buy and sell these items for profit.” Our model - TCB | Taking Care Of Business
This recent rise in resale was likely accelerated by the COVID-19 pandemic and consumers’ “shift to thrift” (Judd and Lowell Jackson 2021, 17). A recently issued resale report by ThredUP, for example, projects that second-hand retail will double in value by 2026, reaching US$ 82 billion globally (Martin 2022).

That having been said, experts in the sector have differing opinions about rising social and environmental awareness among buyers, consumers, and suppliers. While some argue that brands had been “disinvesting and pivoting away” from labour issues for lack of consumer interest, in favour refocusing on environmental concerns, others point out that the pandemic shed light on workers’ struggles in the industry, leading to growing consumer awareness about the human costs of apparel (Judd and Lowell Jackson 2021, 21).

**Job quality and gender aspects of resale**

There is a growing concern that circular jobs, including resale, reproduce old inequalities and decent work deficits. In general, the global textile supply chain is highly feminized (more than 80 per cent of workers in the sector are women) and often characterized by decent work deficits. Fashion brands and companies that produce abroad focus mainly on decent work deficits that characterize the earlier section of their supply chain, forgetting that their retail operation is also characterized by poor working conditions, informality, lack of workers’ rights and feminization of service work (Suarez-Visbal et al. 2022). Initial studies indicate that resale follows the same pattern as in the traditional retail sector. Studies show that the wholesale and retail trade is characterized by an above average proportion of female workers, and a lower than average proportion of workers with tertiary education (Eurofound 2005). Resale jobs are generally part-time, often short-term, and pay just over minimum wage (Suarez-Visbal et al. 2022; Eurofound 2005).

Furthermore, in European countries, volunteers and interns are prevalent in resale, since many of the NGOs and start-ups adopting circular strategies are still at a consolidation stage. In India, most resale jobs are carried out by informal workers. Large volume retailers (including second-hand retailers and thrift stores) in particular are characterized by flexible contracts, a fast working pace, time pressure and physical burden. The second-hand clothing market in Africa, for example, is characterized by informality and dangerous working conditions (BSR 2021).

In general, “harassment, long working hours, and low levels of association and representation are all current concerns in the industry that are at risk of being perpetuated in circular models” (BSR 2021, 6).

Resale is also increasingly characterized by various e-commerce platforms, which may require consideration and policy action to address skills needs, grey areas in the application of labour regulations, and access to basic benefits, social security and labour standards.

“**To transition to a circular economy, the principles of decent work and social justice must be embedded in circular policies, to address inequalities.**
Access-based business models

Clothing as a service in the form of renting, leasing or sharing is not a new model and it is not intrinsically a circular model. However, over the past decade, partly as a response to the 2008 financial crisis, these business models have become widespread in the textiles sector, as new digital platforms have emerged and customers have been seeking more economical options (Brydges et al. 2020).

Recently, awareness has been growing among stakeholders of the need to change the situation in the fashion industry and move towards more sustainable practices, with business models based on access, rather than ownership. This has prompted discussion around the circular economy and more sustainable ways of living. These business models are regarded as sustainable solutions, since a higher utilization rate for clothing items would mean fewer greenhouse gas emissions and less material use (UNEP 2020).

In theory, these models could offer high-quality, durable products at a low periodic fee, granting access to a much broader audience. Offering high-quality, durable products that can be easily upgraded, repaired, refurbished or taken back is therefore essential for these business models to succeed. Ownership of and responsibility for the product remains with the service provider or manufacturer, while the customer pays a recurring or one-off service fee for access to products and additional services. Figure 2 shows the various value strategies used in access-based business models.

The scale of these business models and the number of users varies greatly, from small start-ups and microenterprises running local platforms with tens or hundreds of users, to companies such as United States-based Rent the Runway, which has 8 million customers. Rent the Runway provides an online service for designer dress and accessory rentals. Customers can rent high-end fashion from four to 10 days for a fraction of the retail price. It offers subscription plans, whereby customers pay a monthly fee to continuously refresh their wardrobe, including shipping, dry cleaning and rental insurance (Lacy, Long and Spindler 2020, 27) There are other, big fashion rental companies, including Ycloset in China, GlamCorner in Australia, or the HURR Collective in the United Kingdom, which hopes to become “the Airbnb of fashion” (Roberts-Islam 2019). Rental is also growing in India, where the local online fashion rental market is
valued at around US$ 3–4 billion (Suarez-Visbal et al. 2022) with several existing players, such as Flyrobe, as well as start-ups. Furthermore, access-based business models are increasingly being embraced by large, traditional brands, such as the H&M Group, which complements its existing mainstream, linear models with circular practices.

Challenges and sustainability concerns

Business models based on access face various challenges. First, with regard to the quality of the clothing; pointed out by some stakeholders, consumer expectations regarding the quality of garments can be higher than in ownership models, which increases the pressure on businesses to deal in new and nearly new products, thus accelerating the rate of disposal of garments (Dufourmont et al. 2020). Second, given their nature, fashion rental platforms faced serious challenges during the COVID-19 pandemic; materials and textiles worn close to the skin were associated with hygiene and health risks. The demand for clothing rental also dropped significantly when users began working from home, and events such as weddings, galas or simple nights out were cancelled. Business Insider reported that Rent the Runaway laid off 35 per cent of its staff (Brydges et al. 2020). Third, there are legal barriers for shared use models linked to the management of liabilities and warranties: who is responsible for the product's performance, and how should defects or damage be handled? This is particularly relevant in the case of technical textile products, such as workwear or personal protective equipment (Gillabel et al. 2021).

While access-based models can lead to reduced consumption, they are not necessarily more sustainable than models embedded in linear economy (Kjaer et al. 2019). A lifecycle assessment of a clothing library system, for example, has shown that there are potential environmental benefits, provided the service life of the clothes is substantially prolonged and results in reduced consumption overall (Zamani, Sandin and Peters 2017). However, the affordability of access-based models, such as clothing libraries or rental, may also lead to additional consumption, such as when customers rent designer clothes that they would not wear if they were obliged to buy them, as well as more frequent replacements of clothing to keep up with fashions (Gillabel et al. 2021, 41). Furthermore, the increased logistics of leasing goods could result in additional transport emissions, while hygiene considerations could lead to higher water consumption, which can outweigh the benefits of reduced consumption (Dufourmont et al. 2020; Gillabel et al. 2021).

Job quality and gender aspects of fashion rental]

Businesses sizes range from a single entrepreneur working from home to big companies and established platforms, such as Rent the Runway. While small enterprises focusing on rental platforms can play a key role in the circular economy by offering valuable prospects particularly for female entrepreneurship, it is often argued that access-based business models may pose a risk to the quality of work, since they are often associated with gig or platform work, which is generally characterized by a lack of employment and income security, social protection and occupational safety and health (ILO 2016). Moreover, for companies engaging with this model in western European countries, labour costs can be a significant barrier in building a profitable enterprise therefore they largely draw on the voluntary work by staff or owners/initiators (Elander, Watson and Gylling 2017).

This business model may also result in the growth of roles in sorting, packaging, logistics and delivery work. In certain countries, women are discouraged from taking such roles, which tend to be regarded as “men’s work”. In India, for example, some companies have tried to hire women delivery workers, but risks of sexual harassment, long distance travel, and long working hours have been barriers (BSR 2021, 102). It is also expected that roles in software development will increase the gender gap unless companies take targeted measures to tackle the issue and hire more women. Businesses based on access will have a significant role in shaping a circular economy by creating models that equally provide decent work and employment opportunities for female and male workers alike.
Repair

Repair is crucial as a circular strategy as it aims to extend product-lifespans, reduce new product purchases, and thereby avoid further waste generation. Repair can include in-house repair services, repair tours, third-party repair and DIY kits. With the rise in circular business models, new retail and resale it is anticipated that shops will offer repair services to consumers, either with in-store contractors or direct employees, less formal repair service providers, or through existing suppliers (BSR 2021). Big fashion brands, such as Levis and H&M Group, have already started experimenting with new business models, offering customers tips and hacks and in-store repair services in several locations. Other brands choose to work with third party service providers, such as The Renewal Workshop, which offers resale and renewal services to large apparel brands (BSR 2021, 44).

In the circular economy, consumer motivation to repair clothing is believed to be driven mainly by rational economic calculus and sustainability values. Accordingly, policy actions to increase repair practices have mainly focussed on tax-breaks and tax incentives. While repair might be motivated by individual demands, it is not inevitably a product of rational consumer economic calculus. For instance, emotional attachment and care can be a significant motivation for repair, rather than the instrumental value (Ishenhour and Reno 2019; McLaren, Niskanen and Anshelm 2020).

Additional aspects related to class should also be taken account. On the one hand, the practice of repair is becoming an element of an emerging “eco-consumer habitus”, available to well-off, middle classes, and “closely paralleled by processes of urban gentrification” (MacLaren, Niskanen and Anshelm 2020, 6). On the other, repair is not a choice for many; it is a response to a need, as the fact that circular practices, such as repair, are very common in low-income countries, particularly in the informal economy, has given rise to the notion of a “necessity-driven circular economy” (Korsunova et al. 2022). Understanding motivations to repair in a broader sense, including the underlying social and cultural implications, is key to building circular businesses and integrating decent work aspects in their design.

Job quality and skills issues

In general, research has highlighted shortages in skills relevant to circular economy jobs. This is the case for skills related to tailoring jobs, particularly those required for repair, remanufacture, resale and rental. This shortage is particularly pronounced in Europe (Suarez-Visbal et al. 2022). This might be related to the industry’s offshoring practices, which have dominated since the 1990s, as well as the low social and financial status of these jobs.

In the Netherlands and Spain, skills and knowledge around circularity are mainly brought back by refugees and immigrants (Suarez-Visbal 2022: 24). Experts in the field have emphasized the need to strengthen technical, vocational schools and through them, the professionalization of tailors. These schools should include specializations and re-skilling such as dressmaking, mending, remanufacturing and de-manufacturing. In addition, a revalorization campaign should be created to destigmatize and degenderize the profession” (Suarez-Visbal et al. 2022, 24). Indeed, repair practices are mainly carried out by women.

In India, where the textile industry is crucial and where circular practices such as repair are prevalent, the rapid growth of fast fashion production and consumption has eroded tailoring and semi-skilled stitching jobs, together with the skills necessary for doing them. These skills will need to be reintroduced to ensure a just transition to a circular economy, giving repair workers access to circular jobs (BSR 2021, 100).

Furthermore, it is anticipated that the circular economy will reduce standardization and require greater creativity from workers; repair workers would need to be able to inspect a garment, identify the fault, and carry out non-standardized sewing operations (BSR 2021). Thus, even for manual jobs, workers will need to acquire strong soft skills, such as emotional intelligence, communication, creativity, conflict resolution, tolerance and flexibility (BSR 2021, 7). Digital literacy will be also crucial, particularly for new retail roles.

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7 For instance, in the most recent EU strategy for Sustainable and Circular Textiles, the European Commission encourages “Member States to adopt favourable taxation measures for the reuse and repair sector.” Several EU Member States have already reduced VAT on repair services. VAT has been reduced on minor repair services (including mending and alteration) of shoes and leather goods in Finland, Ireland, Luxembourg, Malta, the Netherlands, Poland, Slovenia and Sweden.
In a circular economy scenario, it is anticipated that repair jobs will increase, yet the social and labour implications of such a shift have not been studied in detail. Repair is currently regarded as a technologically low-skilled occupation, therefore constituting a low-skill opportunity for job creation. Moreover, repair shares characteristics common in the retail industry: short contracts, minimum wages and part-time jobs.

Repair services are increasingly being offered through online platforms. While such models may give workers greater flexibility, broader reflection and policy action may be needed to adapt existing labour and social protection frameworks to these emerging models. Re-skilling and up-skilling repair workers, as well as establishing regulatory frameworks for platform economy work are essential for a transition to a circular economy (BSR 2021, 96). Finally, an integrated package of employment, social protection, and environmental policies would be needed to ensure a just transition (Global Accelerator 2021).

Repair activities in consumer electrical and electronic equipment

Key points

- Today, the global flow of e-waste does not follow the usual route from North to South; it is much more dynamic, including regional routes and exports from traditionally importing countries.
- Repair work has one of the highest levels of labour intensity among circular activities; repair of electricals and electronics has significant potential for local job creation in developed and developing countries alike.
- Challenges remain in terms of scalability, informality and adequate working conditions.
- Fundamental legal barriers prevent the development of an overarching right-to-repair policy framework necessary for creating effective repair services.
- Numerous good initiatives, policies and financial tools exist with the capacity to improve enterprise environment and thus access to repair services.
- The continuous evolution of digital devices means that workforce reskilling is required to develop viable enterprises.

Rapid technological progress in the global electronics industry, and growing access to electronic and electrical products have created new opportunities in key sectors such as health, education and commerce. As the number of people who benefit from digital devices is increasing, the amount of electrical and electronic equipment waste (e-waste) is also rising rapidly, constituting a major environmental and social challenge (ILO 2019a, 1). In 2019, 53.6 mega-tonnes of e-waste were generated. This figure is expected to increase to 74.7 mega-tonnes by 2030. Furthermore, 82.6 per cent (44.3 mega-tonnes) of e-waste generated in 2019 is undocumented; its exact
location and environmental impact remains uncertain (Forti et al. 2020). The growing quantity of e-waste is not only linked to higher consumption rates of electricals and electronics, but also to short product life cycles and few repair options.

While there is no standard definition of e-waste, the Council of Europe Directive on waste electrical and electronic equipment (Directive 2012/19/EU) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal provide a framework describing what “e-waste” encompasses.

Based on that framework, the following six e-waste categories are used globally (ILO 2019b, 2):

- Temperature exchange equipment (e.g. air conditioning units, freezers)
- Screen and monitors (e.g. TVs, laptops)
- Lamps (e.g. LED lamps)
- Large equipment (e.g. washing machines)
- Small equipment (e.g. microwaves)
- Small information technology and telecommunications equipment (e.g. mobile phones, printers)

### The Basel Convention and the global flow of used electronics and electricals and/or e-waste

- By the 1980s, it became evident that hazardous e-waste from the global North was being exported to less developed countries for final disposal.
- 1992: The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal came into effect. This multilateral treaty stipulates that hazardous waste should not be the subject of free trade.
- 1995: a new amendment to the Convention was adopted, banning the export of toxic wastes both for disposal and recycling.
- The problem with “reuse”: the Basel Convention does not cover e-waste exports for reuse. The export of electronics and electricals for reuse is entirely compatible with the Convention’s environmental objectives.
- There is an ongoing debate about how to define what constitutes waste and what is reusable.
- Reuse is an extension of the life-cycle of products, and is therefore in line with circular economy policies.
- A significant amount of e-waste is still exported illegally or under the guise of being for reuse.
- While the exact volume of this flow of e-waste is difficult to measure, estimates suggest that 7–20 per cent of e-waste is exported as second-hand products for reuse.
- The global flow of e-waste does not strictly follow the usual route from “North” to “South”.
- Recent trends show that there are regional routes: second-hand electronics and electricals are being sent for reuse from Northern and Western Europe to Eastern Europe.
- Countries, such as China, which used to predominantly import, such as China, are increasingly exporting e-waste to Southeast Asia, Africa and elsewhere (Forti et al. 2020, 55).
- Some companies in developing countries actively import e-waste, having developed the necessary infrastructure and competencies to reuse and refurbish appliances (ILO 2019b, 8).

At the global level, various governments have put forward policies and legislation to tackle the growing amount of e-waste. Thus far, efforts have focused predominantly on resource recovery through recycling, countermeasures against environmental pollution and the occupational safety and health aspects of recycling activities (Forti et al. 2020). E-waste recycling has created thriving local economies around the world, providing a livelihood for many in low- and middle-income countries. However, e-waste management is mainly part of the informal economy and the sub-standard recycling processes employed can pose a major risk to human health and the environment (Alexander and Reno 2012; Schulz and Lora-Wainwright 2019; Doherty 2022). At the same time, limited attention has been paid to the reduction of e-waste volumes by reuse and repair, despite both practices being
widely supported and promoted by circular economy policies. There is a significant global flow of second-hand electronics and electricals, creating opportunities and challenges for the countries receiving them. Given the implications of the international trade in used electronics and electricals for global repair activities, legal context must be considered.

**Potential for repair**

Adopting circular principles with respect to electronics and electricals can result in more sustainable material management and a reduction in e-waste. Figure 3 shows that if electronics and electrical goods are designed to be durable, produced properly and are later recovered, reused, refurbished, remanufactured and recycled, the electronics and electricals industry can become almost fully circular (UNEP 2021a, 18). The inner, “slowing resource” loop refers to product life-span extension through reuse, repair and refurbishment. These circular activities also offer opportunities for value creation in repair and service business models.

Circular economy experts and advocates have long argued that extending product lifetime by reusing⁸, repairing⁹, refurbishing¹⁰ and employing a “product as a service” model could have significant social and environmental benefits; these economic activities create local job opportunities, including higher value jobs, while they are less energy intensive than manufacture (Möslinger et al. 2022).

The use of electronics and electricals is growing in many African countries, owing to a high influx of imported products, population growth, increasing disposable income and changing consumption patterns. As a result, enterprises focusing on repair and refurbishment of electricals and electronics are widespread across the continent. Ghana and Nigeria in particular have a well-organized repair and refurbishing sector, constituting an important economic activity for many.

In Accra, Ghana and Lagos, Nigeria, more than 30,000 people are estimated to make their income from repair and refurbishment of electronics (Basel Convention 2020, 30).

They work with all types of electrical and electronic products, including cooling and freezing equipment, computing equipment, TVs, mobile phones, and small household appliances. Their services are significant in helping to extend the lifespan of such products. Although both refurbishing and repairing give rise to a significant amount of e-waste, these activities are not linked directly to the e-waste recycling sector, since their business output is a functioning product, whereas for recycling the output is raw material.

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⁸ Re-use: using again used equipment or a functional component from used equipment in the same or a similar function, possibly after refurbishment, repair or upgrading (Basel Convention Glossary 2020).

⁹ Repair: “fixing specified faults in equipment to enable the equipment to be used for its original intended purpose” (Basel Convention Glossary 2020).

¹⁰ Refurbishment: “creating refurbished or reconditioned equipment including such activities as cleaning, data sanitization, and (software) upgrading” (Basel Convention Glossary 2020).
According to an e-waste assessment, the repair success rate in Accra is around 70 per cent and electronic or electrical equipment is likely to last a further year or two after repair (Amoyaw-Osei et al. 2011, 52). In Lagos, there are two refurbishing clusters, the Otigba computer village (also known as the Ikeja computer village) and the Alaba international market. These two clusters comprise around 5,500 small enterprises, many of which are registered with the local authorities and pay taxes, employing around 15,000 technicians and sales persons. Many of the workers have completed higher education and have been through a specialist electronics and electricals apprenticeship system (2–5 years). Both clusters have regional importance as they supply other West and central African households with repaired and refurbished equipment (Basel Convention 2020, 30).

Economies in developing countries tend to be more “circular” than in their developed counterparts, owing to economic necessity (Preston and Lehne 2017, 7). Considering the labour-intensive nature of repair and refurbishing, there is significant job creation potential in these circular jobs, although challenges persist with respect to scalability, informality and adequate working conditions.

Although electricals and electronics are globally circulating commodities, the necessary information, tools and spare parts for their maintenance and successful repair are often held back by manufacturers and cannot circulate freely. This entails an increased tension between manufacturers and consumers, while the growing environmental and social costs of e-waste recycling give way to the global “right to repair” movement.

Right to Repair

There is no universal definition of the “right to repair”, nor there is an overarching policy framework. The “right to repair” movement began in the United States and has become more widespread since the 2000s, although the concept and approaches to its implementation vary from country to country. While in the United States the emphasis is on consumer rights, in Europe the right to repair was mainly propagated through concepts related to the circular economy and the green transition (Svensson et al. 2021; Möslinger et al. 2022).

An effective policy framework to promote repair, and the related right to repair, would need to address fundamental legal and non-legal barriers, namely intellectual property law, contract law, product design and labelling standards, intellectual property protection mechanisms constitute a major challenge by restricting the sharing of repair manuals, use and production of spare parts, and access to embedded software. Digital locks block repair while conditioned sales contracts forbid repair. “Planned obsolescence” is a common issue with electronics. This concept refers to an intentional shortening of product lifespan through software updates and design strategies to render products “out of date” and boost sales of new versions (ILO 2019b, 25).

These barriers are difficult to remove or change, partly due to heavy lobbying by the digital manufacturing industry (Möslinger et al. 2022, 32–33). Removing such barriers would promote repair enterprise development opportunities and ensure access to appropriate skills and capacity.

While there is no overarching right to repair policy framework or legislation, initiatives have been undertaken to address legal barriers, including efforts to make spare parts, tools, and repair information available, introducing longer guarantee periods and providing information to consumers. In 2015, legislation was enacted in France to make planned obsolescence punishable by two years’ imprisonment and a fine of €300,000 (ILO 2019b, 25). Such steps are necessary to create an enabling environment for viable circular enterprises (Möslinger et al. 2022, 18–20).
Business models for repair services

There are two main ways to obtain repair services. First, if a product is still under warranty, repair services can be sought from the original equipment manufacturers, retailers or – in the case of smartphones – network operators. While in some cases manufacturers have in-house repair services, they tend to work predominantly with authorized repairers (Möslinger et al. 2022, 29).

Second, independent repairers can be either authorized partners of the manufacturer or non-authorized repairers. Repairers are typically independent when repairs are not under the product warranty (Möslinger et al. 2022, 29). In the case of smartphone repair in Denmark, for example, the advantage of independent repair services rather than original manufacturers, is that they are available locally, consumers can speak directly to the repairer, prices are competitive and repairs are obtained faster (Riisgaard, Mosgaard and Overgaard Zacho 2016, 121). As well as repairs, they often provide customized services to consumers, such as advice on usage, software update and recovery, mobile phone credit, data-related services, or second-hand repair and sale activities (Riisgaard, Mosgaard and Overgaard Zacho 2016, 117). In Europe, independent repair services largely consist of micro-, small and medium-sized enterprises (MSMEs).

In the context of digitalization, new possibilities are arising for repairing and accessing electrical products and electronics. Websites, such as Rebuy, buy second-hand electronics, repair them, and subsequently sell them on to new customers. The website iFixit sells repair parts and tools, and publishes free-to-access online repair guides. Platforms like iFixit and their online communities have become a knowledge source for alternative repair services in developing countries. In the absence of official information and manuals, for instance, in Uganda, the line between independent repairers and self-repairers are blurred; independent technicians draw mainly on trans-local repair sites accessed online (Houston 2019).

As well as the abovementioned legal barriers, cost can pose a significant obstacle to repairing electronics. In western Europe, for example, where repairs are expensive due to high labour costs, prices can often deter consumers from seeking repair services. Therefore, various economic incentives have been established in the European context that have the potential to increase the demand for repair, as well as to create market opportunities for repair businesses (Möslinger et al. 2022, 16).

The “product as a service” model in electricals and electronics

A shift from sale to rental of electrical appliances and electronics can create a variety of new enterprises and employment opportunities at the local level. Newly emerging companies are renting mobile phones and other electronic devices based on a subscription model. Private businesses or public organizations can buy services, such as lighting, rather than purchasing LED lamps. This is already an established model in Schiphol Airport, Amsterdam, which pays a monthly service fee for light. The service provider remains the owner of the lamps and lighting systems, which it installs, operates and maintains, including removal and recycling of the lamps after use. Besides creating new businesses and innovation opportunities, and thus more jobs, “lighting as a service” systems run more efficiently, leading to significant energy savings. Application of this strategy in Schipol Airport has reduced energy consumption by 50 per cent (Cramer 2017, 16; Ellen MacArthur Foundation).
Repair subsidies
Since 2016, in parts of Austria and Germany, repair subsidy systems have been implemented, whereby consumers are reimbursed up to 50 per cent of repair costs for electronics and electricals. In addition, as part of the COVID-19 recovery fund, all Austrians are eligible to receive up to €200 for repairing electronics and electrical appliances. In Sweden, household appliance repair costs are income tax-deductible (Möslinger et al. 2022, 45).

Repair fund financed by environmental tax contributions
In 2020, a law was enacted in France to establish a fund for reducing repair costs for items, including electronics and electrical appliances, outside legal warranty. The fund allows consumers to access repair services for a reduced price, which is off-set to repairers who belong to a professional network of certified repairers and uphold certain conditions. The fund is financed by environmental tax contributions (éco-contributions).11

Reduced value added tax (VAT) rates on repair services
While the Council of Europe VAT Directive (Directive 2006/112/EC) allows reduced VAT rates for repairing certain products (bicycles, shoes, textiles), it does not apply to electrical appliances and electronics. Advocates of the right to repair have been arguing for eliminating VAT on the sale of second-hand goods and on repair services, which would not only have environmental benefits, but would also boost local job creation (Rreuse 2017).

While high taxes on labour may discourage job creation, especially among MSMEs, they also facilitate a high degree of social protection and public services. There is a recurring recommendation to reduce tax on labour while increasing tax on extraction, use and waste of natural resources. This approach would reduce the use of virgin materials and speed up the shift towards a circular economy (Larsson and Lindfred 2019, 287).

Opportunities for funding enterprise development
To finance sustainable growth and a transition to a circular economy, the EU introduced a finance tool, the green taxonomy, which is a classification system that enables financial actors to guide investments towards more sustainable economic activities (Bär and Schrems 2021). Article 13 of Regulation (EU) 2020/852 (the Taxonomy Regulation) sets out the criteria for economic activity, which can be considered to contribute substantially to the transition to a circular economy.12 This includes economic activity that “prolongs the use of products, including through reuse, design for longevity, repurposing, disassembly, remanufacturing, upgrades and repair, and sharing products”. Thus, the regulatory framework could provide an important opportunity for circular business to receive appropriate financial support for enterprise development and therefore job creation. Further clarification is required, however, with regard to how the taxonomy should be adopted at the country level, and whether established circular models are considered part of the green taxonomy, beyond emerging business models and corporations.

Extended producer responsibility schemes
Most e-waste management legislation is based on the principle of extended producer responsibility. The OECD defines the principle as “an environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle. An extended producer responsibility policy is characterized by:

- the shifting of responsibility (physically and/or economically; fully or partially) upstream toward the producer and away from municipalities
- the provision of incentives to producers to take into account environmental considerations when designing their products.”

In principle, extended producer responsibility schemes could be crucial in the transition to a circular electronics industry by maximizing the value of electrical appliances

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11 "In France, the cost associated to the collection, treatment and recycling of certain products under the extended producer responsibility principle is called the éco-contribution. This additional cost, for products like electronic devices, needs to be distinguished and visible by the consumer” (Möslinger et al. 2022: 45).

and electronics over their lifetime by, for instance, providing better repair services. The introduction of such schemes, however, has proven challenging in many countries. Furthermore, there are concerns that extended producer responsibility initiatives by individual brands or companies may do more harm than good if they are not well coordinated with overall national waste management policies (ILO 2019b, 25). Moreover, in certain cases, extended producer responsibility models may discourage the repair and refurbishment of products (ILO 2019b).

**Employment potential and job quality**

**Occupational safety and health and informality in repair activities**

Repair activities have one of the highest levels of labour intensity among circular activities. Repair of electrical appliances and electronics therefore has significant potential for local job creation, in developed and developing countries alike. In developing countries, repair work is mainly carried out by small and informal enterprises. Given the lack of legal frameworks on safe handling of electronics and electricals, decent work deficits are common, including in relation to occupational safety and health (although less so than for workers in recycling) (Prakash and Manhart 2010, 24–25; Basel Convention 2020, 10).

In Nigeria, repair workers tend to work in small workplaces without proper ventilation systems. Since their work involves using a solder paste that contains lead, workers are exposed to lead fumes for several hours each day (ILO 2019b, 20). As a result, they suffer from itchy eyes and are prone to respiratory diseases, skin and eye irritation, persistent cough and coryza, fatigue, fever, as well as pain caused by exposure to toner dust when repairing photocopiers and laser printers. Minor injuries such as shocks, cuts and burns also occur when repairing electronics and electrical equipment (Ibid). The use of generators in workplaces is also prevalent, owing to frequent power outages. Generators cause noise pollution and gas emissions that can be detrimental to workers’ health (Prakash and Manhart 2010; ILO 2019b). The absence or inadequate use of personal protective equipment is also a concern, often related to workers’ lack of knowledge about the hazards and risks of repair activities. Workers in the informal economy are increasingly exposed to risks and hazards, particularly since they tend to lack proper personal protective equipment.

Owing to the informal nature of repair businesses, most employees in this sector lack access to social protection, such as health and unemployment insurance, and old age pension schemes. In Ghana, it is believed that only 20 per cent of all repair enterprises are registered with local or national authorities (Prakash and Manhart 2010, 41). Although most repair enterprises are informal, they still have informal collective bodies, thus enabling small enterprises organize and solve problems collectively (Prakash and Manhart 2010, 26; Amoyaw-Osei et al. 2011, 51).

Informality not only an issue in developing countries; recent research has identified challenges related to informal repair activities in the Netherlands and Poland (Türkeli et al. 2019). In Flanders, Belgium, only 11–19 per cent of reuse happens through formal enterprises (Delanoëje and Bachus 2020). Experience shows that promoting partnerships between informal and formal stakeholders active in electronics and electricals repair could help to extend existing regulatory frameworks to all stakeholders (Hinchliffe et al. 2020).

**Skills development**

In a circular economy scenario, the demand for low- and mid-skilled jobs is predicted to increase. Providing the skills necessary for performing repair services will therefore be essential. Lack of skilled workers constitutes a barrier to developing viable repair enterprises. While many workers have a technical education (engineers, technicians), a significant proportion of the workforce is
self-taught. Since repair jobs are not considered attractive, young people tend not to choose this career (Möslinger et al. 2022, 30). In western Europe, this lack of attractiveness of repair jobs is related to poor working conditions and low wages. Studies show that “the asymmetry of power between large original equipment manufacturers and small independent repairers can lead to situations where independent repair workers are outsourced employees from original manufacturers, under covert, precarious work relationships” (Möslinger et al. 2022, 31). In western Europe, the labour-intensive repair sector relies heavily on migrant workers, also indicating the low attractiveness of this type of work for native employees (Möslinger et al. 2022).

The continuous evolution of digital devices means that continuous reskilling of the workforce is also required. Promoting training and education activities to broaden workers’ technical skills, soft skills, and entrepreneurial and social skills, would satisfy the current labour demand and create multiple job opportunities.

Inclusion and gender equality

A strong repair sector can have a positive impact on underprivileged communities. In the United States, according to a report by the Federal Trade Commission, “the development of a right to repair would be a life-line to many black-owned small businesses in the repair and maintenance industries” (Möslinger et al. 2022, 39). Furthermore, offering affordable repair services and better quality second-hand digital devices could reduce the financial burden of technological equipment in low-income households.

Women are often underrepresented in electronics and electricals repair jobs, as well as in professions linked to engineering and technologies (Möslinger et al. 2022, 47). In Ghana, for example, only a few jobs, related to the sales of refurbished equipment or finance management are done by women (Prakash and Manhart 2010, 27). Gender inequality limits the availability of skilled workforce in repair and must therefore be addressed (Möslinger et al. 2022, 47). Moreover, providing training in circular skills, such as repair, would improve women’s representation in STEM fields.

Community initiatives, such as repair cafés, are becoming widespread in Europe. Under these initiatives, people can bring their broken products and receive advice, help, knowledge, tools and spare parts from volunteers. While community repair has a key role in raising awareness and developing repair skills, drawing on volunteer labour might not be sustainable in the long run. However, establishing cooperatives and other types of social and solidarity economy enterprises could create salaried employment opportunities with decent working conditions, while lengthening the life-span of electrical appliances and electronics, and supporting the transition to the formal economy.
Understanding food waste at the retail level: towards a circular urban food system

Key points

- Although food waste in retail is mainly an issue of the developed world, it is also on the rise in developing countries, due to rapid urbanization, population growth and changing lifestyles.
- Large retail chains have introduced measures and circular initiatives that aim to tackle food waste at the retail level.
- A new business model has emerged in the food system, directing surplus food back into the food system through redistribution channels.
- While these enterprises provide new employment opportunities, the scope and quality of these emerging jobs remain unclear.

Currently, more than 50 per cent of the world’s population lives in cities. This figure is predicted to increase to almost 70 per cent by 2050. Moreover, it is projected that by 2050, 80 per cent of all food will be consumed – and the majority of food waste generated – in cities. Connecting food and urban agendas is therefore more urgent than ever. Even though food waste in retail is mainly an issue of the developed world, with rapid urbanization, population growth, changing lifestyles, food waste is also rising in developing countries, (Crush and Riley 2019) thus creating a serious challenge in cities with largely linear food systems with waste systems as the endpoint.

(Re)incorporating circular models and new practices into the retail segment, which would benefit retail workers, consumers and the environment equally, will be essential for providing food security and nutrition for a growing urban population in developed and developing countries alike.

Retail is a prominent aspect of urban food systems; tackling food waste and loss more efficiently at the retail level is therefore a prerequisite for a circular economy. In general, retailers can reduce waste through better coordination, storage, inventory control and sales forecasting. Besides these managerial strategies, there are circular economy practices that aim to reduce the loss of food generated at the retail level, and which are beneficial to companies, since circular practices are increasingly becoming a competitive necessity both for corporations and governments (Esposito, Tse and Soufani 2016).

While large retail chains and multinationals have become quite advanced in tackling food waste by introducing various sustainable initiatives that focus on reuse and recycling, SMEs still tend to lag behind due to concerns over the costs incurred and resources needed to change their business practices (UNEP 2021b, 75). At the same time, a new type of business model has emerged in the food system, acting as a “loop entrepreneur”, directing surplus food back into the food system through redistribution channels. “This business model is built around food redistribution, where food waste is treated as a resource through which money can be made, while also addressing an important environmental challenge and delivering socio-economic benefits in the form of employment, incomes, improved nutrition, etc” (UNEP 2021b, 46).
Cooling as a service: ColdHubs Ltd. In Nigeria

Food waste generation can be reduced significantly by improving storage capacities throughout the food supply chain, including retail. ColdHubs Ltd. was founded in 2015 with the aim of providing access to cold storage places for smallholder farmers, retailers and wholesalers of horticultural produce. The ColdHubs facilities are 100 per cent solar-powered, walk-in cold rooms located in farm clusters, produce aggregation centres and outdoor markets. They are designed to store and preserve fresh fruit, vegetables and other perishable foods, extending their shelf-life from two days to more than 21 days. By eliminating or reducing food spoilage, ColdHubs have saved 20,400 tonnes of food from becoming waste, and have increased the household income of over 3,500 farmers and retailers by 50 per cent, and have empowered local Nigerian communities, particularly women, by creating 48 new jobs for them. “ColdHubs operates a simple pay-as-you-store model. Farmers and retailers pay 100 Nigerian Naira (US$ 0.50) to store one 20kg returnable plastic crate per day, inside the cold room. Hubs are operated by a female Hub Operator, who monitors the loading and unloading of crates and collects fees, and a Market Attendant who builds relationships in farm clusters and markets.” Source: Cooling as a Service Initiative. (2020). Cooling as a Service case study: CaaS prize winner ColdHubs improves cold storage access in Nigeria. Retrieved from: 200828_ColdHubs-2.pdf (caas-initiative.org)

Enterprise environment and waste prevention through changing quality standards

Products, particularly fruit and vegetables, that do not meet the quality standards prescribed by retailers can become food waste. However, quality standards are often based on visual appearance rather than food safety or taste (Hermsdorf, Rombach and Bitsch 2017, 2533) and retailers often reject fresh produce with minor visual defects or damage, even though the product is still good and edible. Lowering quality standards for fresh produce is therefore a way to prevent food waste by retailers. In recent years, there have been numerous initiatives and campaigns13 to lower quality standards for fresh produce. Retail chains in Austria, France and Switzerland have started to sell such fresh products by emphasizing their unique appearance (Hermsdorf, Rombach and Bitsch 2017). It was also pointed out that customers of farm shops and agricultural cooperatives tend to buy “uglier” products, which results in these shops generating less food waste than their mainstream counterparts. Furthermore, beyond the increased retailers’ positive reputation, enterprises recognized the economic opportunity in discounted “ugly” food and made use of them by creating and selling healthy cold-pressed juices at premium prices (Esposito, Tse and Soufani 2016).

Enterprise environment and waste reduction through packaging

Packaging serves various purposes, ranging from hygiene and food safety to prolonging the shelf-life of products to informing consumers, and has a crucial role in protecting food as it moves through the supply chain. At the same time, “unnecessary” packaging at the retail level can also generate food and plastic waste and thus increase carbon emissions. Retailers and policymakers continuously seek to reduce packaging as much as possible, or at least to use easily recyclable packaging. While there is no one-size-fits-all solution, there are couple of recurring and already established recommendations in this regard. The first is to avoid oversized packaging and allow consumers to customize the amount of food they buy.14 Offering fresh products, such as fruit and vegetables, loose rather than pre-packed would allow customers to buy the amount of food they need, thus preventing unnecessary wastage. It is also widely suggested that individual packages should be avoided and recyclable packaging materials used wherever possible. However, others argue for new

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13 See for instance the Cannes-winning marketing campaign, entitled “Inglorious fruit & vegetables” for the French supermarket chain Intermarché.

packing solutions, such as biodegradable polymers made from agri-food waste residues, which have the capacity to protect produce against food-borne diseases and chemical contamination (Guillard et al. 2018).

The adoption of more circular practices in packaging is increasingly a competitive necessity for big retail chains. Packaging considerations are therefore often among the main targets of corporate sustainable policies. The French retail chain Carrefour, for example, which has signed international framework agreements with UNI Global Union (ILO 2018b, 25), is dedicated to reducing the quantity of packaging as well as to reaching 100 per cent reusable, recyclable, and compostable packaging by 2025 as part of its circular economy strategy.

There are also initiatives to eliminate packaging entirely, such as through the growing number of “zero waste” shops that stock food in bulk and allow customers to use their own containers to buy precisely the quantity of food they need (Weetman 2020). Nevertheless, changes like these need to be aligned with hygiene requirements and must prioritize human health.

**Enterprise environment and waste prevention through date marking policies**

Studies have shown that various forms of date marking on products contribute to a significant level of confusion among consumers and eventually to food going to waste. Labels such as “use by”, “best if used by”, “sell by” and “best before” stand out in this regard. Nevertheless, there are already country-level initiatives and policies in place to address this issue. In France, for instance, legislation has been enacted to abolish best-before product labelling on non-perishable foods, such as dried pasta, rice, and sugar (Garcia et al. 2016, 32). Goods that are still edible but have passed the “best before” dates are sold in “surplus food” supermarkets (Denmark) at a significantly reduced price.  

Over recent years, several food sharing applications and web platforms have emerged with the aim of reusing surplus food by connecting businesses with customers. For instance, “sharing for money” is a business-to-consumer for profit model intended to reduce waste while also generating revenue. The company Too Good To Go is a case in point, operating in several European countries, connecting customers to retailers and restaurants with surplus food due to labelling issues, which is sold at a significantly discounted price. Other examples include Imperfect Foods in the United States, and the NoFoodWasted mobile application in the Netherlands, which alerts supermarket shoppers to items that are approaching their expiry date (UNEP 2021b, 32).

**Enterprise environment and reuse of edible surplus food by donation**

Throughout history, surplus food has been redistributed for various purposes in the forms of gifts or donations to people in need. Donations from retailers to charities, food banks and hunger relief organizations is a widespread practice and often mentioned as a policy recommendation against food waste generation. In general, food banks are non-profit organizations with an intermediary role between retailers and local charities, groups or communities. Over recent decades, food banks and food rescue programmes have become widespread all over the world.

Today, there are also companies, such as SpoilerAlert, WasteNoFood and GoCopia, which have online marketplaces that directly connect retailers with local non-profit organizations to rescue edible food from going to waste (Esposito, Tse and Soufani. 2016). Food-sharing schemes enabled by digital technologies can be found in Bangkok, Belgrade and Bogotá. In Bangkok, a start-up company, Yindii, connects surplus food providers with consumers. In Belgrade, the web-based platform, FoodSHARE connects food donors, recipients and volunteers, to facilitate the distribution of surplus food to socially disadvantaged groups. There is a similar application in Bogotá, connecting food manufacturers and retailers with food banks (UNEP 2021b, 74).

Food safety, hygiene regulations, liability and other taxation issues pose serious problems for donating food.

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15 The label “use-by” refers to the last date recommended for using the product from a food safety perspective. The “best if used by” or “best before” label recommends the date by when to consume the product in order to experience “peak flavour”, but does not refer to the safety of the product. Lastly, the label “sell by” tells the store how long to display the product (Lipinski et al. 2013).


17 For instance, the World Resource Organization also highlights the importance of donation of unsold products while mapping the possible approaches for reducing waste (Lipinski et al. 2013). Similarly, advocating the establishment of sound links with food banks and charities are among the best practices of the European Community of Consumer Cooperatives for tackling food waste (Eurocoop 2018).
In the United States, the Bill Emerson Good Samaritan Food Donation Act was signed in 1996 to facilitate the donation of food and grocery products to charities and food banks.\(^{18}\) In Italy, in 2016, an advanced law on food donation was passed, updating an existing Act from 2003 entitled La Legge del Buon Samaritano. The aim of the law was to facilitate donation from retailers to charities and non-governmental organizations, and to make the disposal of food waste more difficult (Garcia et al. 2016, 32).

In the European Union, the legal context for surplus food redistribution to charity organizations differs from country to country. In February 2016, a law was adopted in France that obliges retail outlets of 400 square metres or more to give their surplus food to charitable institutions (Hermsdorf, Rombach and Bitsch 2017). In Austria, the Federal Waste Prevention Programme includes several food redistribution measures, such as “the development of incentives for companies to redistribute food or the clarification of legal aspects regarding liability during redistribution to social organisations”.\(^{19}\) In Belgium, supermarkets are required to offer unsold food products – before the “use by” and “best before dates” – to charity organizations in order to renew their environmental permits. In Wallonia, supermarkets are obliged to offer unsold products to at least one food redistribution charity before throwing them away.

Food donations are frequently incentivized by tax deductions for businesses and corporations. In Denmark, donation is tax-deductible with the limit of 14,800 Danish Krone if the company in question is listed as an endorsed association by the Danish tax authority. In Germany, there is no VAT (or only a symbolic rate) on donation and “donations are tax-deductible up to 20 per cent of corporate income or 0.4 per cent of revenue, plus wages and salaries” (Teigiserova, Hamlin and Thomsen 2020).

Social Supermarkets

Social supermarkets\(^{20}\) are another way to redistribute surplus food. Products sold in social supermarkets are donations from food producers, processors and retailers. The donated products are still consumable, although they might be close to their expiry date, may be incorrectly labelled, or may have slightly damaged packaging. While the assortment of food and household products is somewhat limited, the prices are 50 to 70 per cent lower than regular supermarket prices. Social supermarkets are only accessible for low-income individuals or those living below the poverty line. Social supermarket customers have to prove their eligibility with an identification card, which shows their income status. While some argue that this practice stigmatizes people in need (Schneider 2013), others point out that shopping in social supermarkets is more dignified than receiving donations (Holweg, Lienbacher and Zinn 2010).

The benefits of social supermarkets and foodbanks are twofold. First, recipients of food donations and customers of social supermarkets can divert their existing income stream towards other activities, rather than spending it on food. Second, by using reverse logistics, these institutions

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\(^{18}\) “The act protects donors from liability when donating to a non-profit organisation as well as from civil and criminal liability if a product, donated in good faith, later causes harm to one of the needy beneficiaries” (Schneider 2013).


\(^{20}\) They can be found in Austria, France, Germany, Switzerland and the United Kingdom.
reduce the amount of consumable food that goes to landfill.

Job quality and enterprise environment in circular food retail models

With a rising global food demand driven by population and economic growth, as well as urbanization, tackling food waste requires a holistic approach, including stronger social dialogue between governments and employers' and workers' organizations on the retail-related issues discussed above. While establishing good, circular retail practices enhances enterprise development and thus job creation, these initiatives and practices must be aligned with the various dimensions of decent work. Discussions on issues related to packaging and date marking practices are a case in point. While both are potential areas for food waste prevention and reduction, they also give rise to new issues associated with occupational safety and health, which require enhanced dialogue and closer coordination between health and safety authorities and enterprises on the safety and health implications of circular practices. For instance, retail workers are increasingly exposed to pesticides, fungicides and preservatives used repel vermin. Enterprises and workers require a better understanding of the implications of the types of change mentioned above.

While in several countries retail enterprises are incentivized by tax deductions to donate unsaleable food to charity organizations, newly emerging business models, social enterprises or non-profit organizations see economic opportunity in food waste. While these enterprises provide new employment possibilities, the scope and quality of these emerging jobs remain unclear.

Use of volunteers: opportunities and challenges

Food banks and social supermarkets commonly use voluntary labour on a large scale. Since food banks and social supermarkets function as social businesses, their social aim is to reintegrate long-term unemployed people, people who are part of specific employment programmes, former prisoners, people fulfilling their community service sentences or people with disabilities.

The debate includes opportunities and challenges:

- It is argued that these jobs provide opportunities for volunteers in terms of gaining new skills, qualifications and contribute to the local community at the same time.
- While, the use of voluntary labour can have social benefits, some studies have shown that handling and sorting damaged goods, separating edible food from rotten produce and ultimately redistributing surplus food is a labour-intensive activity that is provided free of charge, or at very low cost, to food banks (Tarasuk and Eakin 2003, 182–183). Such physical work can often cause musculoskeletal problems and is therefore associated with occupational safety and health issues.
- At the same time, other research points out that food donations create a “win-win” situation for enterprises as they can nurture a positive image while gaining tax deduction and reducing their food waste disposal costs by drawing on free labour of food banks (Tarasuk and Eakin 2003, 183).
- Other studies show that running entire operations with volunteers can also be costly “in terms of managerial input, inefficient working practices and sub-optimal deployment of available staff resources” (Alexander and Smaje 2008, 6).

Cooperatives as a means to prevent food waste

Urban and peri-urban agriculture have a great capacity to reduce food waste and ensure food security in cities while creating local employment, particularly in MSMEs and in cooperatives (ILO 2013; ILO 2022). Cooperatives are both a business enterprise and a membership-based organization, the main purpose of which is to meet the needs of their members, rather than to make a profit for shareholders. Cooperative principles are based on equity, solidarity and inclusivity. Moreover, cooperatives can increase productivity, while providing social security coverage for their members (ILO 2013). By reconnecting urban consumers and local producers, a study showed that agricultural cooperatives generate up to 80 per cent less food waste than supermarkets.21 Furthermore, this model, which brings buyers and sellers closer together, reduces the need for long-distance food transportation that not only contributes to greenhouse gas emissions but

21 Farm shops and agricultural cooperatives waste up to 80% less fruit and vegetables than supermarkets. - Universitat Autònoma de Barcelona - UAB Barcelona. Accessed 14 April 2023.
also to further food waste generation. Urban and peri-urban agricultural cooperatives, as well as promoting sustainable food production and consumption, are thus key players in creating local green employment with decent work prospects.
Conclusions and further points for consideration

Mainstream circular economy discourse is currently overly focused on the technical, fiscal, managerial, and organizational aspects of circular economy, while neglecting its cultural and social dimensions, including aspects of decent work and social justice, entirely. The transition to a circular economy must not, however, be limited to technological discourse; the economy is always embedded in social, political, and cultural structures, which will affect this transition.

Social dialogue and considerations of social justice are vital to contextualize and ground circular economy policies at the national and local levels (Schröder 2020, 20). As “sustainable development is only possible with the active engagement of the world of work” (ILO 2015), more substantial social and labour considerations are needed to define the circular economy and implement relevant policies. These considerations need to address not only the quantity but also the quality of jobs created, and the effect that the circular economy may have on existing imbalances (from the point of view of gender, race and class, for example) and on the overall response to inequalities.

Rethinking the economy on the basis of circular principles will entail large-scale transformations in the realm of work, including significant changes in the sectoral reallocation of labour, and will require broader redistribution policies aimed at balancing the benefits and costs within society. Current estimates indicate that the retail sector will be positively impacted by a transition to a circular economy, and that the likely “winners” of the shift will be those players who can and will embrace circular economy practices. Accordingly, while jobs will inevitably change, the question remains how they will change and what sort of active labour market policies, sectoral policies and government programmes will be needed to ensure a just transition.

The newly emerging retail sector is a labour-intensive segment of supply chains with demand for low-, middle- and high-skilled workers. This indicates that there is significant social, environmental and economic potential in circular jobs, particularly if they are scaled up. The scalability and formalization of existing and new circular jobs in retail represents a significant challenge, however, particularly in low- and middle-income countries, where circular practices and strategies are already common practice, although they tend to be in the informal economy. Supporting the formalization of circular jobs in repair, resale, rental and reuse, along with strengthening MSMEs that are active in the sector, should be a priority in circular economy policies. Besides informality, the prevalence of insecure forms of employment in new rental, resale and repair jobs (particularly in the clothing industry) poses further decent work challenges in respect of employment and income security, social protection, occupational safety and health and the right to freedom of association and collective bargaining.

Several skills (hard and soft) and competences required in circular jobs have become obsolete in our “throwaway era”; at the same time, new skills have emerged in the wave of accelerating digitalization. Reskilling and upskilling the workforce, as well as strengthening partnerships between vocational school programmes and enterprises, should be an objective of circular economy policies to address digitalization and revive “circular” skills (Suarez-Visbal et al. 2022). In this regard, degenderizing professions and promoting gender equality are important for ensuring the availability of a skilled workforce in the industries discussed.

Social economy enterprise models and cooperatives are suitable forms of business for linking environmental issues with labour sustainability. Cooperatives encourage democratic management and workers’ co-ownership in the business, and therefore have a greater capacity than other production models to create local green employment, while bringing sustainable production closer to consumers, thus shortening supply chains and preventing pollution and waste generation.

The financial sector has a key role to play in the circular economy; developing innovative financing structures for private services, such as retail, and investing in the diversification of the economy by supporting old and emerging circular retail businesses, particularly MSMEs with good capacity for local employment creation, will be essential for the transition to a circular economy.

The transition to a circular economy will impact societies differently, with varying implications for the world of work. A global perspective is therefore required, connecting social dialogue institutions while paying particular attention to local and country level specificities, ensuring a
just transition, the benefits of which will be distributed equally.
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