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Repairing resources
Mapping the scale and value of repair to the circular economy in Flanders

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Mapping the scale and value of repair to the circular economy in Flanders

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Executive Summary

This research, carried out as part of the FWO funded Michelle project, aims to map the magnitude and value associated with repair as a circular strategy in Flanders for the first time. Repair is a key element in any circular economy strategy, preventing resource depletion, keeping goods in circulation longer, and reducing environmental impacts related to the energy needed for new products. It is considered a higher-R strategy, more sustainable compared to lower R strategies like recycling.

Despite increasing attention to higher R strategies in policy discussions, the development of indicators and metrics to measure progress in scaling up repair efforts remains incomplete. Knowledge gaps exist in sectors such as textiles and furniture, often overlooked by existing economic indicators, while more is known about electronic and digital devices. Furthermore, measurements often focus on formal business activities, neglecting the valuable contributions of informal repair settings. Measuring repair has typically been based on public intentions rather than actual behaviors regarding consumer goods repair. Mapping repair in Flanders provides a fuller picture of the circular economy, alongside other indicators included in the CE Monitor, notably reuse, which was mapped in a 2020 publication by Delanoeije & Bachus[1].

A survey of the adult Flemish population (n=1886) funded with support from Circular Flanders was conducted to shed light on the magnitude of repair in Flanders, the amount of expenditure and informal time spent, and to understand who repairs their consumer goods. Respondents were asked whether they had any consumer goods repaired in the 12 months prior to the survey and for each category of goods, the number of items, their type (and thus, the associated weight), the repair channel used, the age and warranty status of the good, and whether having the item repaired prevented them from purchasing a new one.

This research addresses the knowledge gap, showing that the role of repair in the circular economy is significant. Six in ten Flemish adults repaired at least one consumer good in the 12 months prior to the survey, with a total of almost 10 million repairs carried out. This equates to 19kg per Flemish adult each year diverted from becoming waste. However, the propensity towards repair is not equally spread throughout Flemish society. Among those who have had their goods repaired, people are divided into those who primarily carry out repairs themselves and those who primarily outsource them. Additionally, there are gendered and generational patterns in who repairs their goods and how repair skills are acquired. There is also substantial value associated with informal repair, which is not accounted for when measuring the circular economy. The time investment of those who engage in informal self-repair is 1.5 times the size of the current formal workforce. The study concludes with recommendations to promote a repair culture, focus on textiles, recognize the value of informal repair activities,

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1 J Delanoeije, K Bachus - Reuse. The understudied circular economy strategy, 2020 Delanoeije & Bachus (2020). Reuse - The understudied circular economy strategy (cemonitor.be)

encourage repair skill acquisition, address gendered patterns, and combat the throwaway culture that hinders repair.

Samenvatting

Dit onderzoek, uitgevoerd in het kader van het door het FWO gefinancierde Michelle-project, wil voor het eerst de omvang en waarde van herstelling als circulaire strategie in Vlaanderen in kaart brengen. Herstelling is een sleutelelement in elke strategie van de circulaire economie: het voorkomt uitputting van grondstoffen, houdt goederen langer in omloop en vermindert de milieu-impact van de energie die nodig is voor nieuwe producten. Het wordt beschouwd als een hogere R-strategie, duurzamer in vergelijking met lagere R-strategieën zoals recycling.

Ondanks de toenemende aandacht voor hogere R-strategieën in beleidsdiscussies, blijft de ontwikkeling van indicatoren en meetmethoden om de vooruitgang te meten bij het opschalen van reparatie-inspanningen onvolledig. Er zijn hiaten in de kennis in sectoren zoals textiel en meubilair, die vaak over het hoofd worden gezien door bestaande economische indicatoren, terwijl er meer bekend is over elektronische en digitale apparaten. Bovendien richten metingen zich vaak op formele bedrijfsactiviteiten, waardoor de waardevolle bijdragen van informele reparatie-instellingen over het hoofd worden gezien. Het meten van herstellingen is meestal gebaseerd op publieke intenties in plaats van op feitelijk gedrag met betrekking tot de herstelling van consumptiegoederen. Het in kaart brengen van reparatie in Vlaanderen geeft een vollediger beeld van de circulaire economie, naast andere indicatoren die zijn opgenomen in de CE Monitor, met name hergebruik, dat in kaart is gebracht in een 2020 publicatie van Delanoeije & Bachus[2].

Een enquête onder de volwassen Vlaamse bevolking (n=1886), gefinancierd met steun van Vlaanderen Circulair, werd uitgevoerd om licht te werpen op de omvang van reparatie in Vlaanderen, het bedrag van de uitgaven en de informele tijd die eraan wordt besteed, en om te begrijpen wie hun consumptiegoederen repareert. Aan de respondenten werd gevraagd of ze in de 12 maanden voorafgaand aan de enquête consumptiegoederen hadden laten repareren en voor elke categorie goederen, het aantal stuks, hun type (en dus het bijbehorende gewicht), het gebruikte reparatiekanaal, de leeftijd en garantiestatus van het goed, en of de reparatie hen ervan weerhield een nieuw te kopen.

Dit onderzoek toont aan dat de rol van reparatie in de circulaire economie significant is. Zes op de tien Vlaamse volwassenen repareerden minstens één consumptiegoed in de 12 maanden voorafgaand aan het onderzoek, met een totaal van bijna 10 miljoen uitgevoerde reparaties. Dit komt neer op 19 kg per Vlaamse volwassene per jaar die niet als afval beschouwd wordt. De neiging tot herstelling is echter niet gelijk verdeeld over de hele Vlaamse samenleving. Onder degenen die hun goederen hebben laten herstellen, zijn er mensen die reparaties hoofdzakelijk zelf uitvoeren en mensen die ze hoofdzakelijk uitbesteden. Bovendien zijn er gender- en generatiepatronen in wie zijn goederen repareert en hoe reparatievaardigheden worden verworven. Er is ook een

2 J Delanoeije, K Bachus - Reuse. The understudied circular economy strategy, 2020 Delanoeije & Bachus (2020). Reuse - The understudied circular economy strategy (cemonitor.be)

aanzienlijke waarde verbonden aan informele reparaties, waarmee geen rekening wordt gehouden bij het meten van de circulaire economie. De tijdsinvestering van degenen die zich bezighouden met informele zelfreparatie is 1,5 keer zo groot als die van de huidige formele arbeidskrachten. Het onderzoek sluit af met aanbevelingen om een reparatiecultuur te bevorderen, te focussen op textiel, de waarde van informele reparatieactiviteiten te erkennen, het verwerven van reparatievaardigheden aan te moedigen, genderpatronen aan te pakken en de wegwerpcultuur die reparatie in de weg staat te bestrijden.

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1.1 Defining repair within the CE, the role of formal and informal repair

1.1.1 Repair within the circular economy

Within the past fifteen years, the circular economy (CE) as an economic system aimed at minimising waste and maximising resource efficiency has become the go-to paradigm for sustainability, especially in policy, but equally in academic work. It has gained momentum as a new way to create environmentally, economic and socially sustainable systems of provisioning (Kirchherr et al., 2023). As a way of operationalising this sustainability paradigm, reference is often made to so-called r-strategies, including recycling, repairing, reusing and reducing (Stahel, 2016). Generally, these are ranked hierarchically, indicating that reusing is deemed more sustainable than repairing, which is in turn deemed to be more sustainable than recycling (Kirchherr et al., 2017; Potting et al., 2016). Higher ranked r-strategies are widely recognised for having substantive potential for reducing the environmental and resources impact of consumption. Nonetheless, lower r-strategies like recycling and remanufacturing have received significantly more attention in the literature so far (Bakker et al., 2014; Jaeger-Erben, Jensen, et al., 2021; McQueen et al., 2022; Roskladka et al., 2023; Wieser & Tröger, 2018a). Not in the least since these strategies contribute to adding additional value to products previously regarded as waste (Deloitte et al., 2016; Zacho et al., 2018).

	Strategies	
Smarter product use and manu-facture	R0 Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product
	R1 Rethink	Make product use more intensive (e.g. by sharing product)
	R2 Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
Extend lifespan of product and its parts	R3 Reuse	Reuse by another consumer of discarded product which is still in good condition and fulfils its original function
	R4 Repair	Repair and maintenance of defective product so it can be used with its original function
	R5 Refurbish	Restore an old product and bring it up to date
	R6 Remanufacture	Use parts of discarded product in a new product with the same function
	R7 Repurpose	Use discarded product or its parts in a new product with a different function
Useful application of mate-rials	R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
	R9 Recover	Incineration of material with energy recovery

Source (Kirchherr et al., 2017) adapted from (Potting et al., 2016)

Figure 1.1: The 9R framework: circular strategies hierarchically ranked

Repair is recognised to be one of the central drivers in realising a CE, not in the least due to its environmental benefits, and its potential to reduce rebound effects (Lechner & Reimann, 2015; Zink & Geyer, 2017). While exact calculations on the environmental benefits of repair get complicated, in general repair and (preparations for) reuse are found to have beneficial environmental impacts (Boldoczki et al., 2020; Bovea et al., 2020; Manoochehri et al., 2022), with some exceptions in highly energy-intensive cases where the energy usage over the lifetime exceeds the resource costs (e.g. for older electrical appliances can be less energy-efficient than new appliances)(Deloitte et al., 2016; Jerome et al., 2023).

Research on repair as a circular strategy often focusses on its technical and functional aspects (Sonego et al., 2022). Recently, calls to (re-)connect repair to ongoing practices of maintaining, caring and attachment for and to products have emerged (Niskanen et al., 2021; Van Der Velden et al., 2023).

In this understanding, repair has not only a value as a circular strategy to reduce environmental impacts, but encompasses ideas of action against consumerism and notions like commodification of waste and domestic labour (McLaren et al., 2020; Niskanen et al., 2021). Beyond the technical, functional and economic aspects of repair, these calls open up spaces to critically interrogate the true benefits of repair, and if these truly alter existing socio-material relations. Previous research on reuse for example, has shown that despite the high expectations, actual replacement rates for reused goods are low (Delanoeije & Bachus, 2022).

> **Narratives of repair in Flanders**
>
> A recent report published by the CE Centre sheds light on the different narratives of repair of electronics devices in Flanders (Ampe & Bachus, 2022). Seeking to understand the slow uptake of repair, the authors focus on how diverging interpretations of repair can help explain this, and where these align and diverge. Alignment was mainly found on rather small steps towards a circular repair economy, including measures such as informing consumers, involving the social economy and launching pioneer projects. On the political choices which are necessary about the pathways of change, the identified interpretations divert fundamentally. A specific coalition of manufacturers, retailers and recyclers appear to be dominating the public debate, possibly leading to pathways of slow, incremental change to a circular repair society in Flanders.

As the CE has become increasingly a policy priority, indicators and metrics measuring a specific region or country's progress have emerged. The most developed of these indicators are directed at measuring recycling, while metrics relating to repair, reuse or reduce strategies are much more challenging to find (De Pascale et al., 2021; Moraga et al., 2019). Often, these measures relate to environmental aspects of circularity, while the social and economic value is much more difficult to capture, or reduced to (formal) job impacts (Clube, 2022; Geissdoerfer et al., 2017; Valencia et al., 2023). However, some notable examples have been developed in the past, e.g. with respect to reuse (Delanoeije & Bachus, 2022). With respect to the adoption of repair, specific metrics seem to be lacking (Vinante et al., 2021). While there is some monitoring of the progress of the CE at the EU level which includes repair (European Commission, 2018), this monitoring is based on the statistical NACE classification, which was not created to distinguish CE activities (Moraga et al., 2019).

> **Repair and reuse of electronics in Belgium**
>
> In a recent study by Mobius for the Belgian Producers Responsibility organisation Recupel, the repair and reuse of electronics in Belgium was mapped. This study distinguishes the professional repair of electronics, carried out by retailers, manufacturers, independent repairers authorised service centres and second-hand shops, estimated to have a total turnover of 88.5 million euro. Nonprofessional repair was estimated to amount to a turnover of 30.4 million euro, mainly consisting of material and spare parts. Within professional repair, independent repairers amounted to the largest share in turnover, as they do not perform repairs covered by warranty.

1.1.2   Value of repair

Alongside environmental benefits, the circular economy equally intends to deliver economic and social sustainability. This diversity of goals is echoed in research on repair, though it is not often analysed as a separate circular business model (Rosa et al., 2019).

The economic impact of increased formal repair within the CE is difficult to quantify. While many repair businesses are SME's, an increased demand for formal repair could

generate potential for these to grow or for new businesses to emerge. However, any decrease in production of new appliances will only be partially compensated by the revenue generated by increased repair and manufacturing of spare parts. As such, increasing repair is expected to have a general negative impact on manufacturing firms (Deloitte et al., 2016). Similar impacts are to be expected for retailers of new appliances.

> **Current status of the European repair sector**
>
> An extensive report published by EU ETC in 2022 took a closer look into the current status of the repair sector in the EU (Manoochehri et al., 2022). Looking at turnover value, the business to consumer repair sector amounted to more than 20 billion euro in 2019. The majority of this value was generated in the repair of computers and personal and household goods. In terms of employment, around 149.000 FTEs were working in the European B2C repair sector, amounting to about 0.3% of total EU employment. According to this analysis however, Belgium and the Netherlands were the two countries with the lowest employment in the B2C repair sector per capita.

Some (limited) evidence on the economic impact of repair on consumers exists. Research has indicated that repairing a product rather than replacing it can have significant positive economic value for consumers over the whole lifetime of the products, especially for low-income households, at least for consumer electronics (Brusselaers et al., 2019; Deloitte et al., 2016). In the 2019 report on economic impacts for consumers on increased repairability of consumer goods, the authors also indicate that the value of repair can be improved by increasing repairability, increased availability of spare parts and specific policy measures. Additionally, increasing the possibility for more repairs over the lifetime of an electronic product could help increase overall economic benefits to the consumer of owning that electronic device (Brusselaers et al., 2019).

As in the case of the CE in general, repair has been heralded as a strategy for creating local high quality employment, impervious to offshoring and benefitting the environment, and even as a potential strategy to re-integrate groups further from the labour market (Graziano & Trogal, 2023; Llorente-González & Vence, 2020; Manoochehri et al., 2022; Mitchell & Morgan, 2015). Increased repair could strengthen local communities, as a large majority of formal repair is conducted by small- and medium-sized enterprises (Lechner et al., 2021). In 2020, according to Eurostat figures, almost 80% of the companies active in the sector of repair of computers and personal and household goods employed no more than one person, with 98.6% of companies in this sector employing less than ten people (Eurostat, 2022). However, in practice these statements need to be nuanced, as salaries in the repair sector are often lower than average, and informal employment more prevalent (Llorente-González & Vence, 2020). Nonetheless, it is widely known that repair is a comparatively labour-intensive strategy, which explains the relative expenses of much repair compared to new (mass-produced) goods (McCollough & Qiu, 2021).

> **Is professional repair in Flanders still viable?**
> In 2020, a report surveyed the status of the professional repair sector for small household electrical appliances in Flanders. This concluded that due to the high wage costs, steep IT investments, high logistics and overhead costs and the high prices of spare parts, professional repair of small household electrical appliances is economically almost impossible outside of warranty. In addition, those working in this sector indicated that even within warranty, the profitability of these repairs is becoming increasingly difficult. Next to these cost issues, repairers indicated that shorter delivery times for spare parts and better availability of technical information are key to carry out repairs properly.. Finally, a range of policy measures ranging from VAT reductions to cheaper, longer available spare parts and increasing consumer awareness were suggested to make the sector economically viable.

Besides economic value and employment potential, repair can also create significant social value, depending on the exact repair strategies that are applied. Community-led initiatives are cited as building or even reconstructing social relations, and strengthening consumer product attachment and care (Bradley & Persson, 2022; Niskanen et al., 2021). Additionally repair can, just as reuse, improve the accessibility of second-hand goods for disadvantaged households (Delanoeije & Bachus, 2022; Lechner & Reimann, 2015; Manoochehri et al., 2022).

1.2 Enabling formal and informal repair

1.2.1 Enabling (formal) repair

In a cross-EU study on the repair of consumer electronics, 64% of consumers indicated having experience in the past with circular practices like repairing or reusing goods (Consumers, Health, Agriculture and Food Executive Agency. et al., 2018). Previous research indicates that participating in circular practices like these is strongly driven by consumer characteristics (Camacho-Otero et al., 2018). However, other authors have made a call to go beyond people as solely an actor in production-consumption systems, taking (institutional) contexts and cultural affinities into account (Calisto Friant et al., 2020; Hobson, 2020; Schröder et al., 2020). When faced with a malfunctioning product, consumers have to decide if they will repair the product or would rather replace it. In this decision, several factors are relevant: besides consumer characteristics, several barriers and enablers to repair have been identified in the literature, influencing the repair-replace decision. While policy initiatives aimed at addressing some of the barriers to repair have been introduced, research has identified numerous other issues which can hinder repair (Roskladka et al., 2023).

Repair barriers for Flemish consumers

In 2018, the 'Groot repareeronderzoek' was conducted in Flanders. 1000 consumers filled in an online survey, indicating which barriers they incurred when doing repair. For self-repair, respondents indicated mainly to be lacking knowledge, skills and necessary tools. With regards to formal repair, respondents indicated that repairs take too much time or are too costly. Further, respondents indicated they lacked information on where to go with their malfunctioning goods to get them repaired. As new business models are often welcomed as an additional measure to increase repair rates, the survey indicates that there is still some room to improve consumers' willingness to adopt such business models: only a third of respondent would consider to be willing to participating in product-service systems.

In the decision to repair a malfunctioning good, consumers first of all face social and behavioural barriers to have the good repaired. Especially information, trust and convenience are identified as important factors when consumers are considering repair, with convenience in particular being perceived as a major barrier to consumers today (Güsser-Fachbach et al., 2023). As such limited availability of repair services, especially in smaller towns, seems to be a major hinderance for repair instead of replacing consumer goods (Korsunova et al., 2023). The concept of perceived product obsolescence (when a consumer perceives deteriorating product performance) also plays an important role in deciding to repair a malfunctioning product or replace it. While environmental consciousness is usually associated with a higher propensity to repair, environmental consciousness also seems to be strongly correlated with a sooner perceived product obsolescence (Guillard et al., 2023). This effect could somewhat counteract the higher propensity to repair. Interestingly, at least for consumer electronics, a significant majority of consumers intend to replace their product instead of considering repairing it, with consumers more inclined to repair a completely broken product compared to a partially malfunctioning one (Magnier & Mugge, 2022). Additionally, a lack of trust in repair services, unawareness of the possibility of repair or the desire to get a new product can also contribute to non-uptake of repair (Korsunova et al., 2023). Providing good information on consumer rights and the possibility to have something repaired thus proves to be highly effective in stimulating repair. (Consumers, Health, Agriculture and Food Executive Agency. et al., 2018). In the case of textiles for example, though a legal warranty of two years applies, consumers are seldom aware of this warranty and thus do not seem to use this right (Laitala et al., 2021).

Economic barriers to repair also hinder consumers from having their products repaired and inhibits the professional repair sector to become a strong and economically viable economic sector. First of all, the comparatively low price of new products and the low quality of these hinder profitability for repair businesses and diminish motivation to repair for consumers (Laitala et al., 2021). Since labour costs are a major part of the cost of repair, the high total costs of repair plays an important role in the non-uptake of repair (McCollough & Qiu, 2021; Rogers et al., 2021). Additionally, the high price of spare parts and the costs related to logistics and transportation are found to provide additional barriers. Empirical work has shown that more expensive products are being repaired

more than inexpensive goods (Rogers et al., 2021). Modelling has suggested action to decrease labour costs as a way to stimulate repair (e.g. by tax exemptions), but implementation so far has been very limited (The Ex'tax Project, et al., 2016).

Finally, systemic, legal and technical barriers can also hinder repair once the decision for repair is taken. Often, consumer goods are not designed with the intention to have it repaired, with planned obsolescence providing an additional barrier (Svensson et al., 2018; Wieser & Tröger, 2018b). Access to diagnostics, technical information and lacking spare parts are shown to be a problem, with repair shops even keeping malfunctioning devices in stock to harvest spare parts otherwise unavailable (Sabbaghi et al., 2017; Van Der Velden et al., 2023). While specific policy frameworks like the EU waste directive and intellectual property rights have also been identified to be hampering the uptake of repair (Manoochehri et al., 2022).

Key types of barriers to repair			
Systemic/legal	Technical	Economic	Social and behavioral
• Lack of overarching legal requirements at the EU level • Shortcomings in consumer laws (warranty and guarantee conditions) • Lack of criteria to prioritize repair in waste frameworks • Intellectual property rights • Lack of avaialbilty of or access to repair	• Complex or non-modular design of products makes it difficult or impossible to repair • Lack of standard technical specifications • Type of materials used • Lack of or limited access to spare parts • Decreasing number of experts with technical knowledge and skills • Short innovation cycles • Limited access to repair information, hardware or tools • Difficulty in providing repair services to a large range of products and brands	• High costs of repair compared with the cost of purchasing new products • Higher costs of tailor-made repair services compared with mass production • Limited profitabilty of repair businesses and low wages • High price of spare parts	• Lack of knowledge among consumers about repair services and their rights • Decreasing demand for repair services • Low customer expectations of durabiltiy and repairability of products • Lack of trust about the quality of or gurantee of repair services • Lack of interest in gaining professional or occupational skills on repair • Lack of time to search for repair services

Source: ETC CE

Figure 1.2: Overview of barriers to (formal) repair

1.2.2   Informal and formal repair practices/channels

In addition to deciding to repair a malfunctioning good or not, consumers also determine which channel they will use to have the good repaired, i.e. who will conduct the repair. For some repairs, consumers may decide to attempt the repair themselves. Previous research has indicated that this strategy of self-repair is a much-used repair channel, especially for certain types of consumer goods (Laitala et al., 2021). Alternatively, people can turn to people within their social circle for the repair. Typically, this is family or friends, but can also include neighbours and acquaintances. A more organised form of these 'informal' repair activities are community repair initiatives, such as repair cafés and maker spaces which usually emerge bottom-up as opposed to top-down (Jonas et al., 2023). Finally, consumers can turn to formal circuits of repair, like independent

repairers, sellers or manufacturers of the goods. Previous work has shown that in both decisions (repairing or replacing and which channel of repair to use), personal values, experience and preferences play an important role. Additionally, some generational and gendered patterns seem to exist in these decisions.

Consumer adoption of circular strategies such as repair often goes beyond merely accepting new practices, as these often come with specific modes of consumption work (i.e. repairing a product yourself, bringing it to a repair centre,…), which require knowledge, skills, resources and time (Hobson et al., 2021). While new business models such as product-service systems have been discussed as a possible way to increase repair and generate value (Marques et al., 2021), some authors warn that such centralised models could prevent democratisation of repair and monopolise the repair-replace decision, threatening small repair shops and informal workers, jeopardising the social value these settings potentially generate (Sonego et al., 2022). Others warn that interventions like product-service systems go much further than just 'rolling out', but present fundamental changes in socio-material relations (Hobson, 2020).

> **Repair of consumer electronics in Belgium**
> In May 2022, Sharepair administered a survey among 5000 Belgians relating to the consumer behaviour in the repair of electronics. While respondents indicated that in the majority of cases, malfunctioning devices under warranty are taken to be repaired, a significant portion is not. Though many reasons for this are cited, some consumers decide it is not worth the time and effort to take the good back to the retailer or manufacturer. Once the warranty on consumer electronics is over, self-repair becomes a very important channel of repair, with 60% of respondents indicating that they attempted to repair their vacuum cleaner. The reasons cited for not repairing once the warranty is over, is because the costs of repair were too high, or the device was no longer worth the repair cost.

While self-repair has already been identified to be an important repair channel in the literature, some enablers have been identified which could further boost this channel (Fachbach et al., 2022; Jonas et al., 2023). As user manuals currently do not provide any information on the repair of common device failure, providing additional information on how to do these repairs is critical. Research suggest that providing video or step-by-step tutorials on how to address some common failures could empower consumers to repair themselves (Sandez et al., 2023). Additionally, integrating consumer perspectives of care, maintenance and repair into the design of goods could further strengthen consumer repair and prolong product lifetimes (Ackermann et al., 2021).

Informally organised community repair initiatives are recognised as a way to boost repair practices, shifting the responsibility of organising sustainability from the individual consumer responsibility to a collective endeavour. Additionally, these initiatives can provide the necessary infrastructures, such as space, tools, materials and ways to find them and the necessary knowledge sharing (Hector & Botero, 2022). These community repair initiatives help to draw attention to the impact of discarded products and reveal possibilities of repair and product care to consumers, though people involved

in these initiatives can have quite distinct aims such as altruistic, financial or educational (Moalem & Mosgaard, 2021; Roskladka et al., 2023). While these initiatives are valuable sites of learning and positive experiences with repairs, it seems important that participants are connected by more than just practicing repair (Ortega Alvarado et al., 2023). In this sense, community repair initiatives have been described as building social relations and practicing non-consumerist ways of living, rather than just repairing broken items (Bradley & Persson, 2022).

> **Repair cafés in Flanders**
>
> Increasingly repair cafés are not isolated initiatives in big cities, but are being organised all over the country. Nonetheless, repair through these initiatives remains small-scale. In the 2018 'Groot Repareeronderzoek' by De Transformisten, some questions on the awareness about these initiatives and their use by consumers were included. While almost 70% of respondents indicated that they had heard about repair cafés or similar initiatives, only 6.4% had actually been to one with less than half of these responding that they had had something repaired there. However, more than half of the respondents who knew of repair cafés were planning on attending one in the future.

As mentioned before, being acquainted with repair and trust in repair services can be major enablers for repair (Fachbach et al., 2022). These positive experiences are often not directly linked to successful repair outcomes, but rather with spending time in a meaningful or relaxing way with friends or family members (Korsunova et al., 2023). As people experience this as a meaningful way of spending time, cost is in these informal settings often much less important than with regards to formal repair. Additionally, these activities can add to the potential social value of repair as a form of reconstruction and reconciliation (McLaren et al., 2020). These forms of repair bring forward the role of the consumer as a caretaker rather than a user of goods, which goes against often-cited CE discourses of consumers as users of services rather than owners (Bradley & Persson, 2022; Gregson et al., 2015).

While the intention of repair is strongly influenced by personal traits like values, beliefs and attitudes relating to product repair, repair ability and skill has also been identified as a major factor to enable repair in informal settings (Jaeger-Erben, Frick, et al., 2021; Rogers et al., 2021). This lack of skill has been ascribed to an increased complexity in product design, less need for maintenance practices in contemporary appliances, low replacement costs and a cultural perception that new is better (Rogers et al., 2021). Especially for some electronic devices like smartphones, a perception of novelty can have a profound impact on the repair-replace decision of consumers (Jaeger-Erben, Frick, et al., 2021). In this sense, actively engaging in repair can be interpreted as going actively against the mainstream consumerist culture (Ortega Alvarado et al., 2023).

> **Do Belgians engage in repair?**
>
> In the **National climate survey**, administered in 2021, some questions relating to the repair of appliances were included. Amongst Belgians, 58% indicated that they were repairing malfunctioning appliances as much as possible. In total 71% of respondent indicated that they are doing this or intend to do this in the near future. Overall, 43% of consumers believed that repairing malfunctioning appliances matters to mitigate climate change. Interestingly, people living in larger cities were more positive that repair matters in mitigating climate change.
>
> In **special Eurobarometer 501** on European citizens' attitudes towards the environment, only 32% of Belgians indicated that they repaired a product instead of replacing it in the past six months.

Self-repair is often successful for simple, non-electric goods, which are easy to diagnose and inspect, and the higher consumers perceive the difficulty to repair, the lower their intention to repair is (Fachbach et al., 2022). Additionally consumers often perceive the self-repair of electric appliances as dangerous (Korsunova et al., 2023). Experience or relatives with skills or experience can help people in undertaking more complex, lengthy or expensive repairs (Korsunova et al., 2023). Positive past repair experiences increase consumers' intention to repair, possibly by increasing trust in consumers' own skill for repair or increased trust in repair services (Fachbach et al., 2022). Closely linked, a lack of confidence is identified as a barrier to repair for some consumers (Terzioğlu, 2021). As such, repair could be strengthened by initiatives aimed at building capacities to improve involvement in repair and supporting the development of skills among repair volunteers (Manwaring, 2024; Parajuly et al., 2023). Additionally, empowering consumers in (relatively easy) repair skills could help to divide labour between professional and informal repair, such that easy, unprofitable repairs can be conducted by consumers themselves (e.g. sewing on a button or mending a minor hole) (Laitala et al., 2021).

On the formal side of repair channels, independent repair shops fill the gap between (expensive) authorised repair which is often covered by warranty or insurance, and throwing the product away (Van Der Velden et al., 2023). Also, they contribute to the creation of a circular spare parts economy for electronic goods, both at local and global levels. To this end, often these shops carry old faulty devices to use the (refurbished) spare parts when a product is brought in. However, previous research has identified that these independent repair shops have to operate under slim margins as new products are comparatively inexpensive (Laitala et al., 2021).

Some interesting previous work has been done in identifying which factors play a role for consumers to decide which of these formal and informal channels will be used for repair. While environmental awareness seems to be an important predictor of repair in general and of self-repair, self-repairers' intention to repair has been identified to also be strongly influenced by social norms (Fachbach et al., 2022; Rogers et al., 2021).

With regards to demographic characteristics in relation to the channels most used for repair, some interesting dynamics have been identified in research. When it comes to gender, multiple studies have confirmed that classical gendered patterns (Coltrane, 1989) are reproduced in repair, even when such initiatives actively seek to democratise repair (Dunbar-Hester, 2008; Rosner & Ames, 2014). For example, women are found to be more likely to rely on repair services than men, possibly due to higher trust in these (Fachbach et al., 2022; Rogers et al., 2021). On the other hand, women are more likely to participate in the self-repair of clothing and textiles, while men more often repair electronics, small appliances, tools and bicycles themselves (Laitala et al., 2021; McQueen et al., 2022; Rogers et al., 2021).

With regards to age, the available literature does not seem to provide a definitive answer. Some research indicates that older consumers use repair services more and repair more in general (Fachbach et al., 2022; Pérez-Belis et al., 2017). Other research finds no significant effects (Rogers et al., 2021). For textiles, older women are more likely to engage in self-repair or use a formal repair service, while younger women are more often found to have clothing repaired by a family member or friend (McQueen et al., 2022).

Educational background is equally divided. While some authors equate educational attainment with environmental awareness (McCollough, 2014), which is corroborated by certain studies (Rogers et al., 2021). Others find no significant effects (Fachbach et al., 2022). While maintenance and repair of objects is often seen as a trait that only needs to be practiced by those who cannot afford to buy new, and is thus perceived to be a trait of shame, getting lost over the generations (Terzioğlu, 2021), no significant effect of income on repair intentions has clearly emerged (Fachbach et al., 2022).

1.3   Governance of repair

1.3.1   Policy at the EU level

Since the end of the 1990's, the EU has implemented successive policies aimed at promoting consumer rights and increasing energy efficiency and durability of products that are brought on the EU market. The foundations for protecting consumers' right to durable products were laid by the inclusion of a legal guarantee providing consumers with the right to have a cost-free replacement or reparation of a malfunctioning product included in the 1999 Consumer Sales and Guarantees Directive (Van Gool & Michel, 2019). In 2005, the first eco-design directive, aimed to reduce the energy use of certain energy intensive products (like boilers, computers and transformers) was introduced, specifically aimed to reduce greenhouse gas emissions from the use of these products at a low cost. The scope of products that were included in this directive was extended in 2009.

With the adoption of the first circular economy action plan in 2015, the EU aimed to become a global frontrunner in the transition from a linear to a circular economy[3].

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[3] https://environment.ec.europa.eu/topics/circular-economy/first-circular-economy-action-plan_en

Implementing the 54 actions that were included, would aim to boost the circular economy, competitiveness and provide new business opportunities. By 2019, all of these actions (most of which were related to reducing material use or increasing recyclability and waste collection) were implemented or ongoing.

At the end of 2019, the European commission adopted the European Green deal as Europe's new agenda for sustainable growth. This policy package aims to transform Europe into a "*modern, resource-efficient and competitive economy"*[4], making Europe the first climate-neutral continent. In this context, a new Circular Economy Action plan was adopted at the start of 2020[5]. This new action plan aims to go broader than the first action plan, introducing policy measures which affect the entire life cycle of products, targeting the design of products, encouraging sustainable consumption and ensuring that waste is prevented. By the end of 2020, the European commission also adopted the New Consumer Agenda, which aims to empower consumers to play an active driver of green and digital transitions. From the Circular Economy Action Plan and the New Consumer Agenda, four notable initiatives emerged focussed on increasing the sustainability of products, but also on providing consumers with better information and governing the availability and costs of spare parts to enable the repair of products. As such, these initiatives seek to incorporate sustainability and circularity throughout the whole consumption process, as they intervene in the design stage, make sure consumers receive fair and reliable information before and at the purchase, and provide consumers with more options for repair during the lifecycle of the products.

A first initiative is the new Ecodesign for Sustainable Products Regulation[6]. Building on the experience with the previous eco-design directives, it seeks to implement new requirements to significantly improve the circularity, energy performance and overall environmental aspects of specific product groups. As such it will seek to progressively set standards on all products in the scope of the regulation that are brought on the EU market, including standards on durability, upgradability, recycled content, environmental footprint, information requirements and repairability.[7] While it sets standards for almost all non-food products put on the EU market, consumer electronics have been identified as a priority category, with others following later. Civil society organisations are generally positive, they have stressed their concern to make sure the principles are applied quickly and effectively and to make sure no loopholes are included in this legislation.[8]

Secondly, a proposal for a Directive on Green Claims was adopted by the European Commission in March 2023[9]. As environmental labels and claims on products today are often vague or misleading, this leads to distrust in them by consumers. To remedy this, the proposed directive seeks to make green claims more reliable and comparable for

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4 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

5 https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en

6 https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products-regulation_en

7 https://ec.europa.eu/commission/presscorner/detail/en/ip_23_6257

8 https://repair.eu/wp-content/uploads/2023/08/shaping_a_circular_future_2023.pdf

9 https://environment.ec.europa.eu/topics/circular-economy/green-claims_en#:~:text=The%20proposal%20requires%20companies%20to,science%20based%20and%20verifiable%20methods.

consumers, helping them to make well-informed purchasing decisions when it comes to the environmental performance and circularity of products.

Thirdly, a new Directive on Empowering Consumers for the Green transition is aimed at providing consumers information specifically on durability and repairability before purchasing a product, as well as protecting consumers from some greenwashing practices.[10] By amending the Consumer Rights Directive and the Unfair Commercial Practices Directive, additional information on sustainability, repairability (such as a repair score) and information on prolonged guarantee will need to be disclosed. However, some organisations warn that the current framework still contains some loopholes which should be solved.[11] Additionally, ten new practices are added to the list of misleading commercial practices that are banned in all circumstances. This includes planned obsolescence, use of unverified sustainability labels or false claims about the repairability and durability of products.

The proposal for a Directive on common rules promoting the repair of goods aims to build a framework to create a 'right to repair' for consumers.[12] The provisional deal between the EU parliament and council was reached at the beginning of February 2024 and includes a range of measures to promote the repair of goods. . The period of legal guarantee is extended by one year in the case a faulty product is repaired during the legal guarantee period. After the period of the legal guarantee, consumers will be able to request easier and cheaper repairs. Manufacturers will also be required to publish information on repair services, including indicative prices of common repairs, and will be prohibited include barriers to repair in their products by limiting the use of second-hand, compatible or 3D-printed parts by contract, hardware or software. European Member States will also need to take at least one measure to promote the repair of goods. Finally, a European repair platform will be set up, making it easier for consumers to find suitable repairers. While the proposals are welcomed as very promising, some questions on the affordability of repair and the scope of the directive remain, as well as concerns that repair instead of replacement of a faulty product within the warranty period will not be effective, as consumers choosing a replacement will benefit from a renewed two-year warranty period instead of one extra year in the case of a repair.

1.3.2   Belgian policy for repair

The Belgian Federal Government approved an action plan to boost the circular economy at the end of 2021, containing 25 actions that aim to boost circularity in Belgium. In September 2022, 6 additional actions were approved and added to the action plan.[13] This plan seeks to complement the European initiatives, and pertains to the competences of the Federal government, like product policy, taxation, public procurement and consumer protection. It includes measures such as increasing the reliability on sustainability information and labelling (until the EU initiatives are fully working), increasing circular public procurement practices, an information campaign on

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10 https://commission.europa.eu/live-work-travel-eu/consumer-rights-and-complaints/sustainable-consumption_en

11 https://repair.eu/wp-content/uploads/2023/06/Right-to-Repair-Europe-feedback-on-Empowering-Consumers-Directive.pdf

12 https://ec.europa.eu/commission/presscorner/detail/en/ip_24_608 ; https://data.consilium.europa.eu/doc/document/ST-6461-2024-INIT/en/pdf

13 https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/paf_face_sept_2022_nl_-_version_finale.pdf

circular economy, and numerous improved standards with regards to single-material products and recycled content. For repair, the most important measure that was included was the introduction of a repairability score. In January 2024, this score was adopted into law, obliging the inclusion of a repairability index on certain appliances starting from 2026. This repairability score is based on the French repairability index, following the same calculation method and covering washing machines, dishwashers, vacuum cleaners, high-pressure cleaners, lawn-mowers televisions and laptops, but not smartphones.[14] It takes into account the availability of technical information and maintenance manuals, how easily devices can be disassembled, and parts can be accessed with standard tools, if spare parts are available, the price of these spare parts compared to the cost of these device and some more product-specific criteria.

For tax policy, the main instrument that applies to repair is reduced VAT on specific repair services. While the regular VAT rate in Belgium is 21%, the reduced tariff of 6% is applied to repair services of bikes, shoes, leather products and clothing. While this is an important tax incentive to stimulate (formal) repair services, some organisations want to strengthen this incentive by abolishing VAT on repair services all together, or by including the repair of electrical appliances.[15] Since 2022, this extension of reduced VAT to repair of electronics is possible under EU law. [16]

A final measure to stimulate repair is the possibility to pay for repair services using 'Ecocheques', a specific fringe benefit for employees to stimulate sustainable consumption.[17] Additionally, repair is stimulated through information campaigns, research, subsidies for innovative projects and the support of specific initiatives such as repair cafés and repair hubs by various regional and local actors.

1.4   Summary

Repair is widely acknowledged as a crucial driver of the circular economy, offering undeniable social and environmental benefits. While its economic advantages are somewhat unclear, especially in informal settings, upscaling repair has become a central theme in policy discussions. Despite this increasing attention, the development of specific indicators and metrics to measure progress in scaling up repair efforts remains inadequate.

Existing economic indicators for repair primarily rely on statistical classifications that often overlook sectors such as textiles and furniture, focusing predominantly on electronics. Moreover, these indicators, based on formal business activities, fail to capture the significant contributions of informal repair settings. Yet, research consistently highlights the social value of informal repair, both in organised and unorganised settings, indicating a substantial gap in accurately measuring the economic impact of repair.

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14 https://repair.eu/news/the-belgian-repairability-index-includes-the-price-of-spare-parts-will-the-eu-level-up-with-this-ambition/
15https://repairshare.be/wp-content/uploads/2021/10/NL_Beleidsaanbevelingen-Recht-op-Repareren-Campagne-2021.pdf
16https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32022L0542
17 https://cnt-nar.be/sites/default/files/documents/nl/Lijst-N-23.pdf

Furthermore, while the environmental benefits of repair are widely acknowledged, comprehensive metrics to quantify the total volume of repair and the associated waste diverted from landfills are notably absent. Without such metrics, assessing the true environmental impact of repair initiatives and its progress remains challenging.

Moreover, research and policy efforts predominantly concentrate on electronics, with textiles also receiving some attention. However, a substantial gap exists in understanding the repair dynamics of various goods across different settings. Gendered patterns in repair behaviour are discernible, although generational patterns in repair behaviour remain inconclusive.

Addressing these gaps in research and policy could yield significant insights and recommendations for upscaling repair efforts. Furthermore, while consumer research has predominantly focused on intentions to repair or willingness to pay, there is a crucial need to bridge the gap between intentions and actual behaviour and expenditure to effectively understand repair practices.

In conclusion, advancing repair policies necessitates a comprehensive understanding of its economic, social, and environmental dimensions. Bridging the gaps in measuring economic value, quantifying environmental impact, understanding gendered and generational patterns, and aligning consumer intentions with behaviour are critical steps towards realising the full potential of repair as a circular strategy.

1.5 Objectives and research questions

The main aim of this research was to map the full picture of repair as a circular strategy in Flanders. The Cambridge dictionary[18] defines repair as "to put something that is damaged, broken, or not working correctly, back into good condition or make it work again". This places the emphasis on effectively restoring something that is no longer working or in good condition. As such, there is a thin line between repair and maintenance. Both actions are integral to the longevity and functionality of what we own. Maintenance is a proactive activity in order to prevent certain issues such as regular servicing of our bicycles. Repair could be argued to be a more reactive measure when something malfunctions or is worn. The reason that it is difficult to clearly delineate each concept is because of their interconnectedness. Repairs can be viewed as maintenance (i.e., fixing a bike chain is repair, but the replacement of a tyre could be considered to be maintenance or as a repair since a worn tyre could be viewed as 'not working correctly'). As a result, this study leaves the exact interpretation of 'repair' to the respondent's discretion. This approach acknowledges the complexity and subjectivity when trying to distinguish between repair and maintenance.

18 Cambridge dictionary definition retrieved 08 March 2024 https://dictionary.cambridge.org/dictionary/english/repair

This study examines the case of repair for several reasons. First, repair is a key element in any circular economy strategy. As a pillar of a circular economy, it prevents resource depletion, keeps goods in circulation for longer and reduces environmental impacts related to the energy needed for new products. In the hierarchy of R-Strategies in a circular economy, repair (together with reuse) is considered a more sustainable strategy than lower R strategies of recycling. Repair preserves its value and keeps the product in use for longer and prevents the purchase of new goods. Second, Flanders has already led the way in shifting from a focus on recycling to other higher strategies with the introduction of a reuse target alongside existing recycling targets. The reuse landscape was mapped in a CE Centre publication (Delanoeije & Bachus 2020[19]). Here we take a similar approach in order to put repair in the picture to map the magnitude and value associated with repair in Flanders.

The first research question this study seeks to answer is estimating the magnitude of repair, the balance between formal and informal activities and repair strategies:

RQ1A. What is the magnitude of repair of consumer goods in Flanders?
RQ1B. Is repair primarily a formal or informal activity, outsourced or self-repair and for which types of consumer goods?

Our second research question focusses on the investment made in repair activities both formally and informally.

RQ2. How much time and money are invested in the repair of consumer goods?

The final research question is related to identifying the characteristics associated with repair activities.

RQ3A. Who repairs their goods through self-repair or outsourcing?
RQ3B. Which are the primarily sources of skills of self-repairers?

1.6   Methodology

To shed light on the research questions asked above, with additional financial support from Circular Flanders, a 15-minute online survey study was conducted amongst 1,886 Flemish adults. The data was collected during at the end of October and the beginning of November 2023. The survey was carried out using Computer-Assisted Web Interviewing (CAWI) utilising a non-probability (volunteer) online access panel as a sampling frame. Respondents were drawn based on available profile data (age, gender and region) and pre-defined sub-sample sizes (i.e., quota). Interlocked quota on age, gender and region were utilised to match to the population statistics. Quota was also set on broad education levels. Data was weighted to match population statistics on age, gender and region.

Participation in the survey was voluntary and participants provided full data for all survey questions. An information screen informed respondents that the survey was about whether they had repaired themselves or had someone else successfully repair any consumer goods. A clarification was given to define 'consumer goods' as everything

19 J Delanoeije, K Bachus - Reuse. The understudied circular economy strategy, 2020 Delanoeije & Bachus (2020). Reuse - The understudied circular economy strategy (cemonitor.be)

in and around the home whilst home, car or other motorised vehicle repair fell outside the scope of the survey (apart from an electric bicycle).

To estimate the magnitude of repair in Flanders the survey first asked a screening question. The question asked "In the past 12 months, have you had any of the following consumer goods successfully repaired (either repaired it yourself or someone else repaired it)? Respondents indicated whether they had any goods successfully repaired from one of six categories, or that they did not have anything successfully repaired in the 12 months prior to the survey. The six categories of goods were:

1. Furniture (e.g., chairs, tables, sofa, outdoor furniture, bookcase)
2. Clothing or textiles (e.g., clothes, shoes, sheets)
3. Electrical appliance (e.g., power washer, vacuum cleaner, coffee machine, washing machine)
4. Electronic device (e.g., laptops, TVs, phones, DVD players)
5. Bicycle
6. Other (e.g., sports equipment, musical instrument, non-electrical tools, buggy, toys, tools, small personal goods such as jewellery or clocks)

Respondents who had no goods successfully repaired were not asked further questions (n=762). Whereas amongst those who chose at least one category of goods questions were posed which mapped the repair of those goods (n=1124). Furthermore, they were asked additional socio-demographic characteristics as well as attitudinal and behavioural questions. For each category of goods respondents indicated the number of items they had repaired. For each item they then indicated

- The type of item it was;
- Who carried out the repair;
- How much time the repair took (in the case of self-repair of the item);
- How much was spent (in euro) on the repair (including costs in kind);
- The warranty status;
- Whether the repair of the item prevented the replacement of the item.

The type of items within each category of goods was a pre-defined list of goods. A database of the average weight (expressed in kilograms) of goods subject to reuse was kindly supplied by the Kringloopwinkel[20] (Vites). The pre-defined list of goods was primarily identified by using the aggregate categories within the database and using example of the specific items in brackets. For example, large storage furniture (e.g., bookcase, kitchen cabinet, wardrobe). A variable was added for each sub-category of goods in the dataset indicating the kilograms of that sub-category. In the case of the 'other' category, respondents themselves indicated the weight of the item. In this way it was possible to calculate both the number of goods and the total kilograms repaired by each respondent. This then resulted in an average number of goods and kilograms repaired which could be extrapolated to the Flemish adult population based on Statbel statistics stating the number of adults in Flanders on the 1st of January 2023.

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20 Kringwinkels are thrift shops in Flanders that sell reused goods at affordable prices to prevent them being waste and offer jobs, training and social mobility to people with fewer opportunities on the labour market.

All statistical difference mentioned in the report are statistically significant unless otherwise mentioned. Statistical significance is calculated at the 95% confidence level, meaning that the null hypothesis of no difference has been rejected at the 5% probability level.

The percentages in this report are reported without a decimal in the text, though graphs are made with the decimals taken into account. Therefore, the percentages in the text may not add up to 100% exactly due to rounding the percentages.

Table 1.1: Full sample profile

Variable	Proportion
Gender	
Men	50%
Women	50%
Age	
18-24	9%
25-34	12%
35-44	16%
45-54	19%
55-64	16%
65+	28%
Education	
Low	20%
Medium	40%
High	40%

Table 1.2: Sample profile of those screened into the survey (i.e., those with consumer goods successfully repaired)

Variable	%
Making ends meet	
(Very) Difficult	13%
Somewhat difficult	28%
Somewhat easy	39%
(Very) Easy	23%
Occupational status	
Self-employed	3%
Full-time employee	41%
Part-time employee	8%
Retired	30%
Homemaker	3%
Seeking a job/unemployed	1%
Student	8%
Unable to work (e.g., disability)	6%

2 | The magnitude of repair in Flanders

Some prior information about the proportion of the population in Flanders who repairs their consumer goods, and the volume of repaired goods is available for some types of consumer goods but not others. Most existing information on the repair of consumer goods is related to electrical and electronic equipment (EEE). A 2022 survey[21] identified whether Belgian consumers owned several types of EEE, whether these appliances and devices had broken down in the two years prior to the survey and whether respondents had repaired it in that case.

The Groot Repareeronderzoek[22] also captured how many products broke down and how many respondents had repaired in the categories of large and small electronics, multi-media, clothing, furniture, tools and bikes – though the channels through which actual repairs were carried out were not captured. Instead, the survey questioned the population as to what respondents intentions were should various types of consumer good break-down. This identified whether people have the reflex to have someone else repair items when they break down, do it themselves or buy a replacement and which channels they would intend to use should a product break down within each consumer good category.

There is a gap in our knowledge of the degree to which consumer goods, and which types of consumer goods, are repaired through which channels. The formal side of repair is subject to measurement on the basis of company statistics relating to the number of enterprises, people employed and turnover. However, anecdotally we know that repair is a primarily informal activity without a view on the full scale of this. This chapter addresses this gap and sheds light on the gap between intentions and actual behaviour.

2.1   The proportion of the population who have their consumer goods repaired

The European Commission's 2018 behavioural study[23] on consumers engagement in the circular economy measured rates of repair. That study was carried out in 12 Member States (not including Belgium) and asked about when a product had last broken down,

21 Rousseau, C. (2022) Consumer behaviour survey on repairability Ethan Frome (nweurope.eu)

22 Het Grote Repareeronderzoek - Repair & Share (repairshare.be)

23 European Commission, Consumers, Health, Agriculture and Food Executive Agency, Duke, C., Thorun, C., Dekeulenaer, F. et al., Behavioural study on consumers' engagement in the circular economy – Final report, {CEU}, 2018, https://data.europa.eu/doi/10.2818/956512

and if they had the product repaired. In that case, the results found that 64% had repaired a product. The Groot Repareeronderzoek (2018) asked how often respondents repair items or have items repaired with a result that 15% said that this was at least on a monthly basis and a further 58% said this was annually or several times within a year.

From the results of our survey carried out amongst the adult Flemish population which asked concretely for different types of consumer goods whether they had an item successfully repaired or not, 60% had at least one consumer good successfully repaired in the prior 12 months. The difference with the Groot Repareeronderzoek may be that respondents needed to think about how often they have their items repaired compared to asking concretely which items they had repaired.

For people who had something successfully repaired in the past 12 months, first we distinguished whether they did any of those repairs themselves. We find that a quarter of the population have done at least one repair themselves. We then distinguish between those who could be characterised as self-repairers compared to people who mainly outsource their repairs (though they may do some themselves). Self-repairers were defined as being those who had performed half or more of the repairs of their consumer goods themselves in the past 12 months. 'Outsourcers' on the other hand, are those who utilised formal or informal channels for the repair and had repaired less than half of the repairs of their consumer goods themselves.

Applying these definitions, we find that 19% of people can be identified as being **self-repairers**. On the other hand, double that proportion (41%) had **outsourced** more than half of their repairs to formal or informal channels. Characteristically, those who outsource rarely had conducted any repair at all themselves: 35% of the population were identified as 'outsourcers' who did not carry out a single one of the repairs themselves.

60% Had at least one consumer good repaired in the past 12 months

Self-repair	Outsource	Did not repair
19%	41%	40%
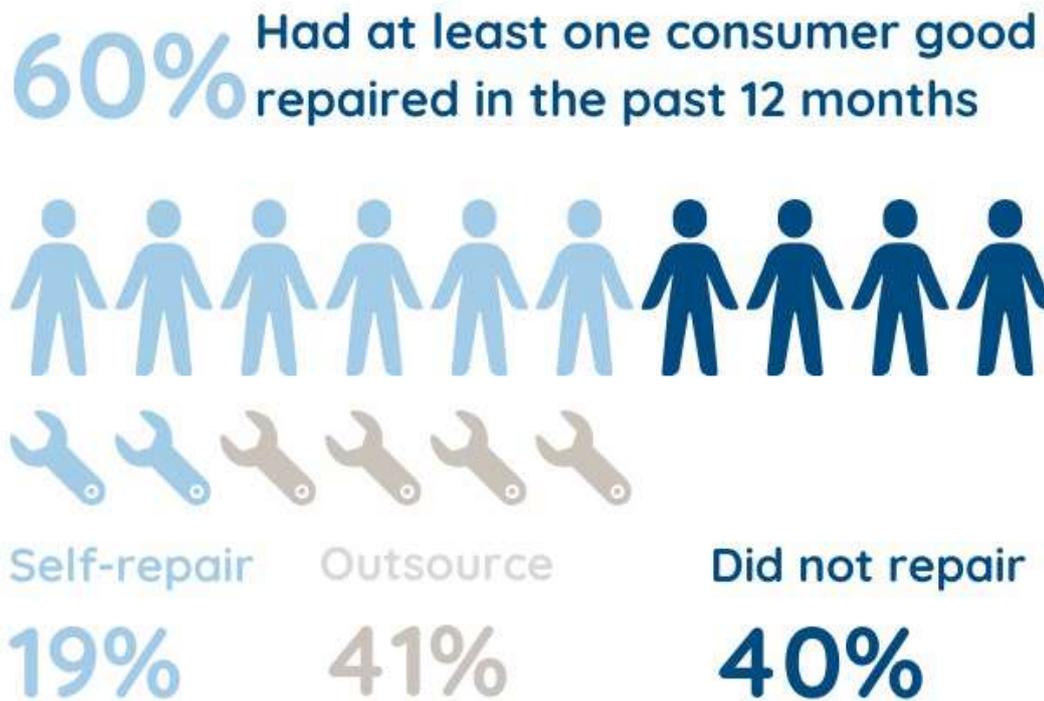
Figure 2.1: The proportion of the population who had a consumer good repaired in the past 12 months by profile

2.2 Categories of goods that are repaired

The most common category of goods that were repaired was textiles with approximately a third (31%) of Flemish adults having at least one item repaired in this category. A close second was bikes at just over a quarter (27%). Almost a fifth (18%) had an electrical appliance (such as a washing machine, vacuum cleaner or microwave) repaired. Smaller proportions (13% and 12% respectively) had an electronic device (such as a smartphone, tablet or laptop) and/or a piece of furniture repaired. Only 3% had some other type of consumer good beyond these categories repaired.
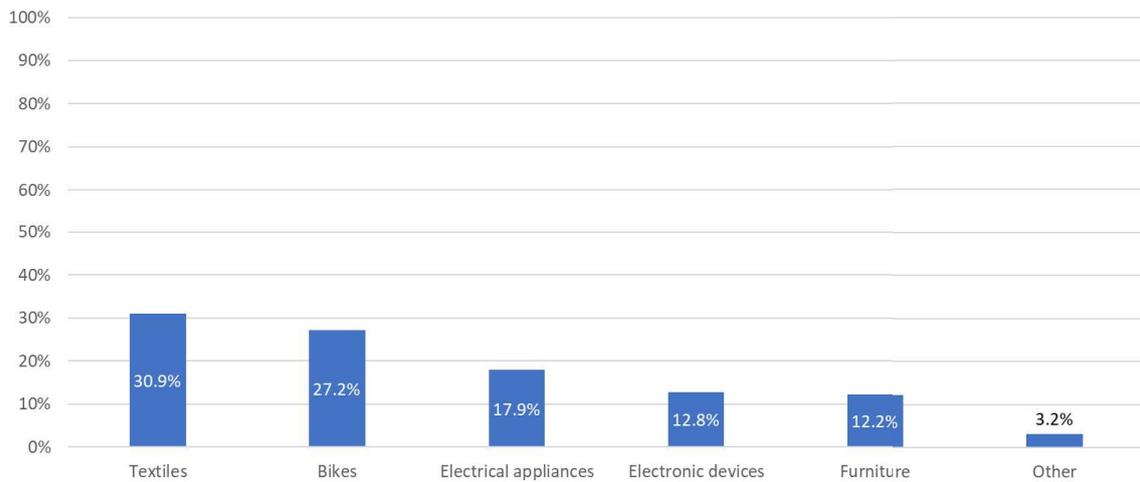
Figure 2.2: Incidence of repair in the previous 12 months amongst Flemish adults of different categories of consumer goods %

Another recent survey carried out by Mobius for Recupel's[24] study on repair and reuse focussed on the category of electrical and electronic equipment (EEE) in 2021. Their unit of analysis was slightly different as they took the household rather than the individual and were extrapolating to the entire Belgian population and not only Flanders. Nevertheless, 24% of respondents to their survey answered that they had an electrical or electronic product repaired that year. When we looked at our survey sample of those who had either an electronic or electrical device repaired, we find a similar result of 26% of the adult Flemish population having had at least one of these items repaired in the previous year.

We can also compare these figures to the incidence of buying or receiving second-hand goods surveyed in 2020[25]. A third of Flemish adults participated in reusing textiles (buying or receiving) and almost a quarter reused any type of electrical appliance or furniture. Therefore, similar numbers of the Flemish population repair textiles and EEE as they do reuse them, but furniture repair is about half as common as reuse.

2.3 The number of repairs carried out per adult

On average almost two items (1.78) were repaired by each Flemish adult during the 12 months prior to the survey. This equates to almost 10 million (9,729,385) consumer goods repaired in the time span of a year.

The category of textiles is by far the largest share of the volume of repairs carried out at almost half of all repairs (44%). The patterns, as expected, then mostly follow the incidence of repair illustrated above. Taking electrical appliances and electronic devices together results in an estimated 0.38 items repaired per adult. Extrapolating this to the Flemish adult population results in a figure of 2.06 million electrical appliances and

24 Möbius (2022) Herstel en Hergebruik Onderzoek Eindrapport_Herstel en hergebruik studie Recupel
25 Delanoeije & Bachus (2020). Reuse - The understudied circular economy strategy)

electronic devices repaired in the past year. This compares to a figure of 2.2 million repairs estimated to be carried out by the 2022 Recupel study by households across Belgium (and not only Flanders). Therefore, our survey seems to suggest that the repair of these types of consumer goods is more prevalent in comparison to their survey.
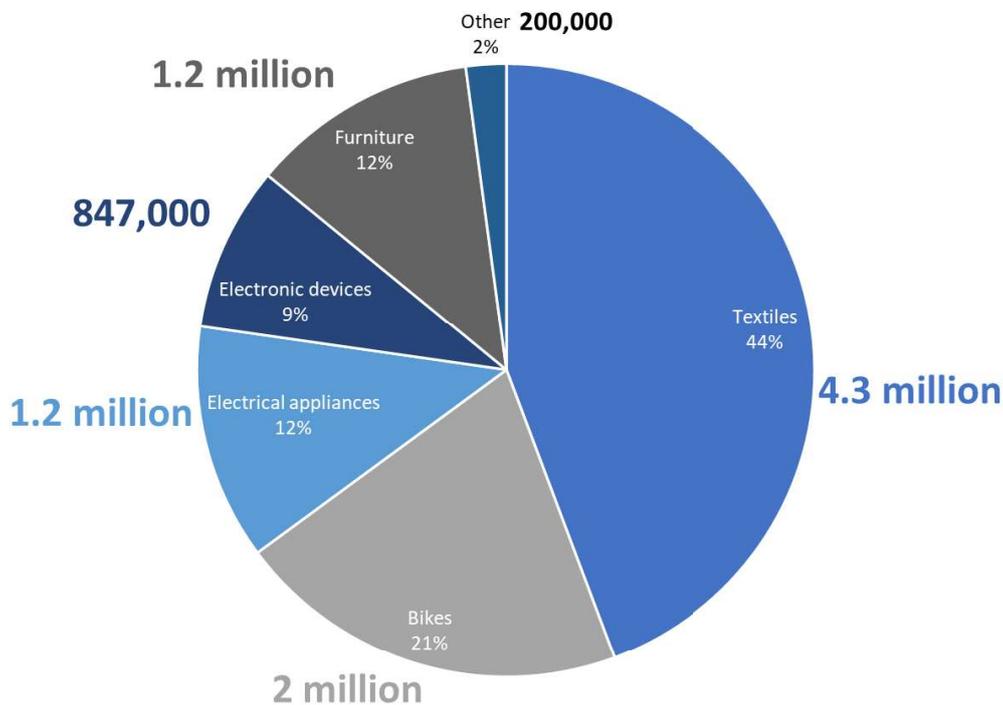

Figure 2.3: Proportion and number of items (rounded) repaired by the Flemish adult population according to the category of item

2.4 The volume of waste avoided through repair

In a circular economy a strong emphasis is placed on minimising waste, maximising resource efficiency and creating closed-loop systems where amongst other things, consumer goods are reused, repaired, remanufactured and recycled. Therefore, it is not only the incidence of repair that is important to measure. The volume of repair measured in kilograms (kg) within a circular economy is a metric that helps us to quantify and measure the waste that is avoided (as the products would be discarded or replaced) by being repaired.

In order to calculate the volume of repair in kilograms respondents were first asked if they had successfully had an item repaired in any one of the six categories of consumer goods. For each category of consumer goods, they then indicated how many items they had repaired. For each item respondents indicated a sub-category which related to what exactly that item was. This was matched to a database of the Kringloopwinkels[26] which provides the average weights of goods within that sub-category. For the calculation of

26 Kringwinkels are thrift shops in Flanders that sell reused goods at affordable prices to prevent them being waste and offer jobs, training and social mobility to people with fewer opportunities on the labour market.

cargo bikes an average weight was calculated amongst popular brands of cargo bikes on the Flemish market. By doing so the kilogram weight of repaired consumer goods was assigned to the sample with a kilogram weight of 0 kg assigned to those who had nothing repaired.

Therefore, based on our data, calculations provide an estimate of 19kg per adult on the full sample of 1,886 Flemish adults. This is then extrapolated from the sample to the full adult population of Flanders. In order to do so, we utilised data from Statbel[27] providing population statistics on January 1st 2023 for Flanders in different age categories to identify the number of people in the adult population (aged 18+). Extrapolating the survey findings results in a calculation of a total of 103,802 tonnes of goods having been repaired in the past year. The breakdown of this volume of repaired goods is as follows:

Table 2.1: Kilograms of repair per adult in Flanders amongst categories of consumer goods

Category of consumer goods	Kg/adult	Total volume of waste
Furniture	5.13 kg/adult	28,021 tonnes
Textiles	0.22 kg/adult	1,217 tonnes
Electrical appliances	6.17 kg/adult	33,698 tonnes
Electronic devices	0.62 kg/adult	3,390 tonnes
Bikes	6.61 kg/adult	36,114 tonnes
Other	0.25 kg/adult	1,362 tonnes
TOTAL	19.01 kg/adult	103,802 tonnes

As mentioned at the beginning of this chapter, textiles were most commonly repaired by the Flemish population at almost a third of Flemish adults having done so in the past

27 Structure of the Population | Statbel (fgov.be)

12 months. However, given their average weight being comparatively light compared to other consumer goods, it comes in last place when measuring repair in kg volume. It constitutes less than 2% of the volume of repair when measured in kilograms. This contrasts with bikes which are both voluminous in terms of the number of Flemish adults who repaired this category of goods and given their average weight contribute almost 7kg of the average 19kg per adult that was repaired. A similar picture can be painted when it comes to electrical appliances, primarily driven by the weight of white goods (i.e., large electrical goods used domestically such as washing machines, fridges, freezers, etc.) which make up 34% of all electrical appliances repaired.

This indicator can be compared to several others to put it in perspective.
- Raw Material Consumption (RMC) is the material footprint of Flemish consumption. This stood at **196 million** tonnes in 2021[28]. This estimates that the material footprint of 2021 equates to 28 tonnes per capita after a dip to 23.5 tonnes during the COVID-19 period of reduced consumption.
- In 2022, 98 million units of new household EEE were put on the market in Flanders. That is 14.7 units per inhabitant. This compares to 2.06 units repaired per Flemish adult in 2023 based on the results of this survey.
- In 2020 an indicator that measures circular reuse in Flanders estimates that **221 thousand** tonnes of goods, or 33.8 kg per inhabitant[29] are reused compared to the 19kg of repair per adult.

2.5   Repair channels

Repair of consumer goods can be carried out by various channels, both formal and informal. On the formal side, manufacturers or retailers, who are often bound by their warranty obligations, handle a portion of repairs in that capacity. Independent professional repairers (including accredited service centres) also play a key role. There are also new business models of thrift shops offering repair as a service. On the other hand, informal repair practices carried out by family and friends, communities of repair such as repair cafes, in addition to individuals carrying out repair themselves contribute to a diverse repair landscape.

An overview of Europe's repair sector in 2022[30] provides evidence about the activity levels of formal business-to-consumer (B2C) repair services in Europe in three key product groups (electrical and electronic equipment – EEE, textiles and furniture). It utilised NACE 95 of companies covering repair of computers, personal and household goods to present the volume of the formal consumer goods repair sector (measured as turnover and full-time equivalents- FTEs). What is not well documented is the balance between formal and informal channels for the repair of consumer goods.

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28 Input-output analysis helps to explain evolutions in the Flemish material footprint (vlaanderen.be)

29 Delanoeije & Bachus (2020). Reuse - The understudied circular economy strategy (cemonitor.be)

30 S Manoochehri, Schleup M., Dams Y., Mehlhart, G., Bekkeold Lingas, D, Marin G., Nicolau M., & Colgan S. 2022 An overview of Europe's repair sector.

The Groot Repareeronderzoek survey asked people which channels they would use to repair several types of consumer goods capturing intention to use certain channels. Therefore, respondents in 2018 were speculating about which channels they would use to repair certain items, and our survey captures which channels were used in practice for the repair of goods. The primary message that came from The Groot Repareeronderzoek was that formal repair channels were preferred over self-repair and informal repair for all types of goods asked about, especially big electro.
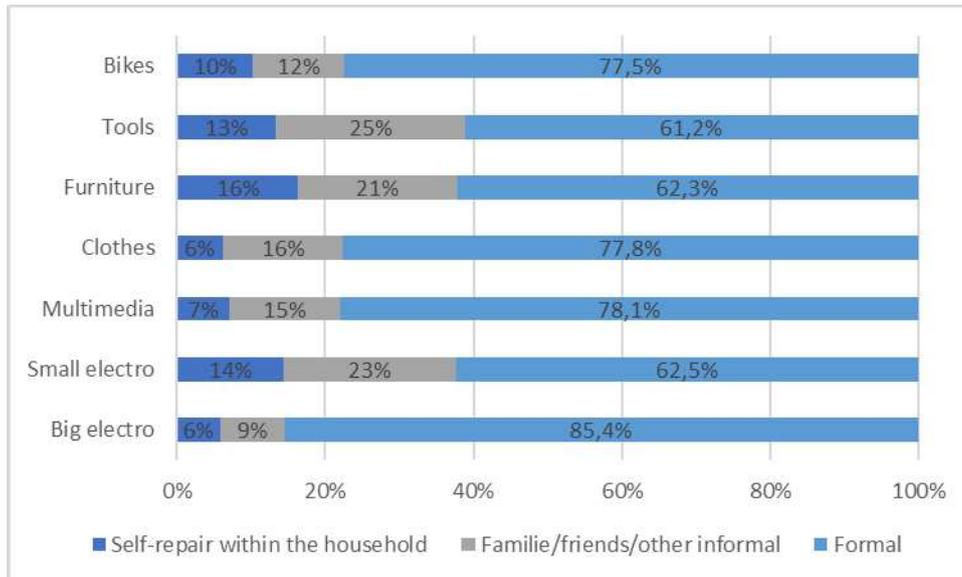
Figure 2.4   Groot Repareeronderzoek results on the intention to use certain channels of repair

Based on those results together with data that captures the volume of repair through formal channels by looking at the turnover and number of staff employed in NACE 95 companies, we might estimate informal repair as a small share of repair labour. This survey seeks to address the gap in the evidence to understand the volume of consumer goods that were repaired through both formal and informal channels in order to estimate the volume (and in a later chapter the value) of repair in Flanders. For each item within the six categories of consumer goods surveyed we asked respondents to indicate who carried out the repair.

The figures from the survey indicate an opposite pattern than that when respondents were invited to speculate on which channel they would use for a repair. Self-reliance and familial assistance are a more important source of repair than formal channels. The primary method by which consumer goods were repaired was by personal efforts (36%) alongside reliance on family members (19%). Items repaired by independent professional repairers came in as the third most common channel (17%) whilst 12% of items were repaired by the retailer/seller and only 5% by the manufacturer.

Legend:
- Yourself
- A family member
- A friend/neighbour/someone you know
- A repair café
- A thrift store (e.g. Kringwinkel)
- An independent professional repairer
- The retailer/seller
- The manufacturer

Values shown: 36%, 19%, 7%, 3%, 1%, 17%, 12%, 5%. Labelled "Formal" and "Informal".

Figure 2.5   Distribution of all repaired consumer goods by channel of repair

The reliance on informal channels of repair is clear amongst most of the various categories of consumer goods, particularly furniture. Only 18% of repaired furniture was repaired through formal channels. Textiles also stand out for being different to the other consumer goods due to the small number repaired by the manufacturer; less than 1% of all repaired textiles.

When it comes to self-repair this is significantly lower when it comes to the repair of electrical appliances, devices and bikes. In fact, bikes are the exception to the prevalence of the primary use of informal channels of repair. 6 in 10 bikes were repaired through formal channels, typically the retailer/seller but also through independent professional repairers. The repair of electrical appliances is also more in balance between formal and informal channels. This broadly compares to the findings of the Recupel[31] study which, from a sample size of 300, found that for EEE formal repair made up 40% of the total number of repairs in a year.

31 Möbius (2022) Herstel en Hergebruik Onderzoek

Table 2.2: Overview of repair channels for each product category (in %)

	Furniture	Textiles	Electrical appliances	Electronic devices	Bikes	Other
Manufacturer	4.2%	0.7%	16.4%	10.3%	6.1%	12.7%
Retailer/seller	3.0%	2.7%	15.4%	20.7%	32.6%	15.5%
Independent professional repairer	8.9%	19.3%	11.8%	18.6%	18.9%	5.6%
Thrift store	1.5%	0.5%	1.9%	1.4%	2.8%	2.8%
Formal channels	**17.6%**	**23.2%**	**45.5%**	**51.0%**	**60.4%**	**36.6%**
Repair Café	1.7%	1.9%	5.2%	5.5%	1.4%	2.8%
Family member	20.5%	26.6%	14.5%	12.8%	9.9%	9.9%
Friend/neighbour	7.7%	7.9%	3.6%	6.6%	4.3%	8.5%
Yourself	52.6%	40.4%	31.3%	24.1%	24.0%	42.3%
Informal channels	**82.5%**	**76.8%**	**54.6%**	**49.0%**	**39.6%**	**63.5%**

**Source** QXc Who carried out the repair?

2.6 The age and warranty status of repaired goods

Whilst many factors are at play when making repair decisions, the predominance of informal repair activities is clearly related to the age and warranty status of the consumer products.

In Belgium, in line with EU regulation, consumers are entitled to a minimum of two years of legal guarantee on all goods purchased from a professional seller that are faulty or do not look or work as advertised. This period is reduced to one year for used goods sold by retailers[32]. Defects that are the result of normal wear and tear are not eligible for the legal guarantee. This warranty can also be extended by manufacturers or retailers which can take the format of a commercial gesture or as an extended warranty which consumers take out and pay for. Remedies for having a defective product are either that the seller offers a repair or a replacement of the item. Should those remedies not fix the problem, they can also provide a refund. In the case of minor defects, a price reduction can also be considered.

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32 Second-hand goods sold at public auction are exempt.

According to respondents, as might be expected, the vast majority of what they had repaired was no longer under warranty. This already indicates that we could expect the prevalence for informal repair to be higher than pursuing formal channels. According to the survey results, other than electrical appliances and electronic devices, less than ten percent of all other categories of consumer goods were said to be under warranty when they were repaired. In the case of electrical appliances and electronic devices this figure sat at 20%. When it comes to textiles in only rare cases (4%) were the goods thought to be under warranty.
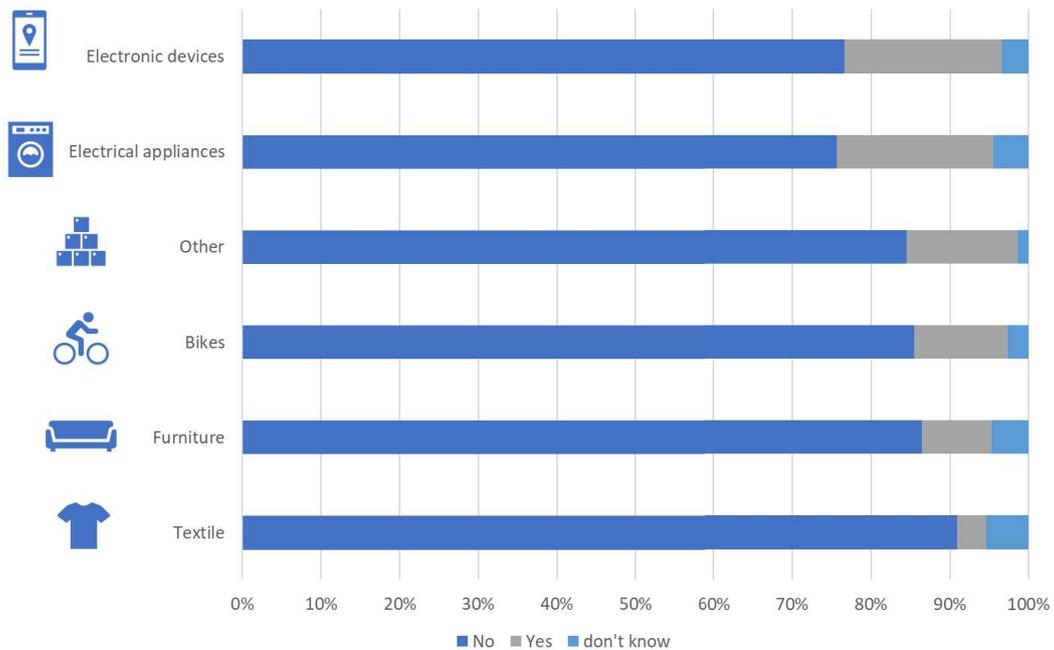
Figure 2.6: % of repaired consumer goods under warranty

When consumer goods are under warranty they are predominantly repaired through formal channels. Two-thirds of consumer goods that respondents reported as having been repaired whilst still under warranty were repaired by either the manufacturer or the retailer/seller. This is in stark contrast to only 13% of consumer goods not under warranty. This confirms that product-service combinations are still a rare phenomenon in the Flemish economy. Interestingly, similar proportions of consumer goods under warranty and not under warranty were repaired by independent professional repairers.
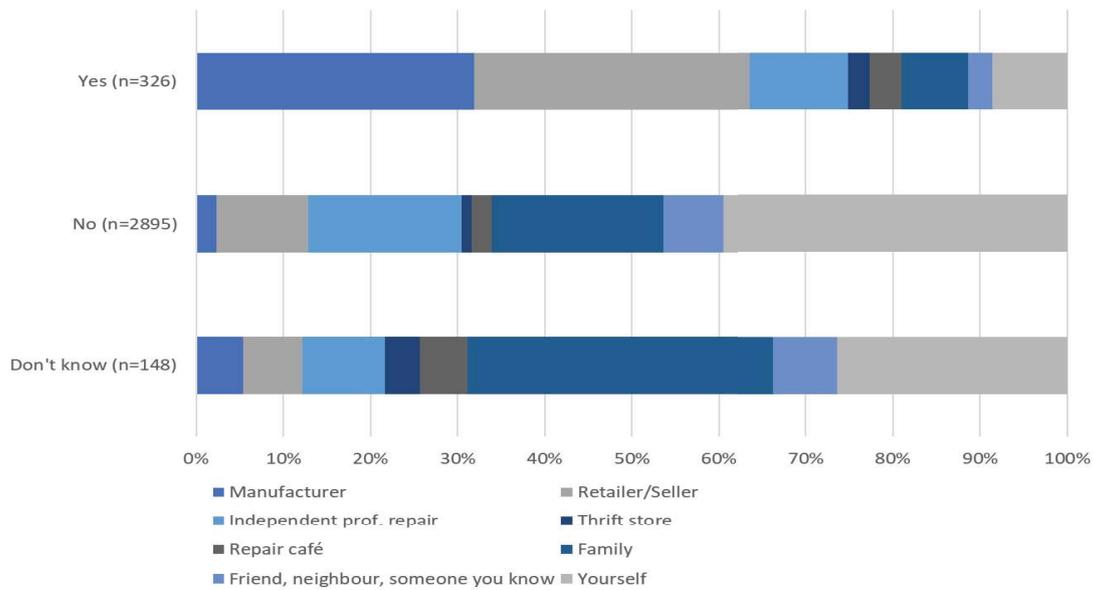
Figure 2.7: % under warranty (or not) and the channel utilised for repair

Evidence from the European Commission Consumer Conditions Scoreboard[33] which collected data in November 2022, found that despite European regulation in the area of consumer protection, less than half (43%) of Europeans (and 46% of Belgians) understood their right to a free repair or replacement in the event of a new product breaking down within two years of delivery. Alongside other factors, this lack of knowledge can result in goods consumers purchase becoming defective within their warranty period and being discarded prematurely, although they could be repaired and used for a longer period of time.

In this survey we focus in on items that were successfully repaired, and therefore we cannot speculate about items that required repair, but consumers did not pursue that solution. Nevertheless, it is interesting to look at the age of consumer goods which were successfully repaired that respondents claimed were under warranty or not. As shown in Figure 2.3 below, 28% of all repaired consumer goods were 2 years old or less and thought by the respondents to no longer be under warranty. As shown in the graph, the vast majority of these goods were textiles (22%), and the remainder were a mix of all other categories of consumer goods.

[33] Key consumer data - European Commission (europa.eu)
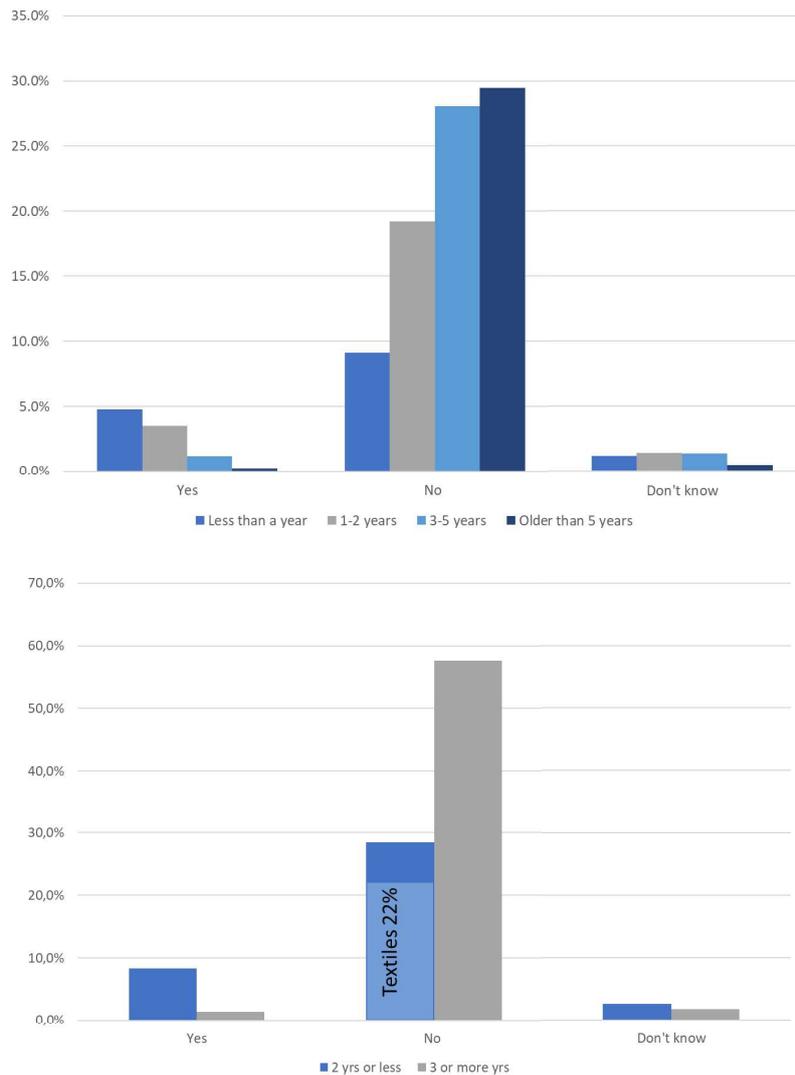
Figure 2.8: % of repaired consumer goods under warranty and age of the consumer goods

Consumers have the right to have products repaired or replaced within the legal guarantee period of two years, but not beyond its expiry or for defects not covered by the guarantee. Defects that are not commonly covered by the guarantee are those caused by accidental damage or improper use. The results from the survey highlight that a fifth of all repaired goods are textiles that were two years old or newer but considered by consumers to not be under guarantee at the time of repair.

Beuc (the European Consumer Organisation)[34] has previously highlighted that whilst textiles are covered by the same European regulation there is less awareness among consumers on the use of legal guarantees for clothes and textiles compared to other products such as electronics. The evidence from our survey shows that a considerable proportion of the Flemish adult population have had a textile item repaired in the past year (31%). The total number of repaired textiles equates to 4.3 million items. 58% of those repaired textiles are two years old or less, which equates to 25% of all repaired goods. This indicates that people are actively repairing relatively new clothing items.

34 BEUC-X-2023-099_Fashion_makeover_making_sustainable_textiles_fit_consumers

Furthermore, half (51%) of all repaired textiles were two years old or newer but were not considered by consumers to be covered by a warranty. Only 4% of textiles were relatively new and considered to be under warranty.

This can be contrasted to the case of electronic devices (e.g., smartphones, tablets, TVs, laptops etc.). Far fewer adults have those items repaired; 13% of the population resulting in 847,116 electronic devices repaired in the past year. A sizeable share of those items were also relatively new; almost four in ten (37%) of those devices were two years old or newer. Whereas only 4% of all textiles were relatively new and considered to be under warranty, 18% of all electronic devices were both relatively new and repaired whilst being considered under warranty.
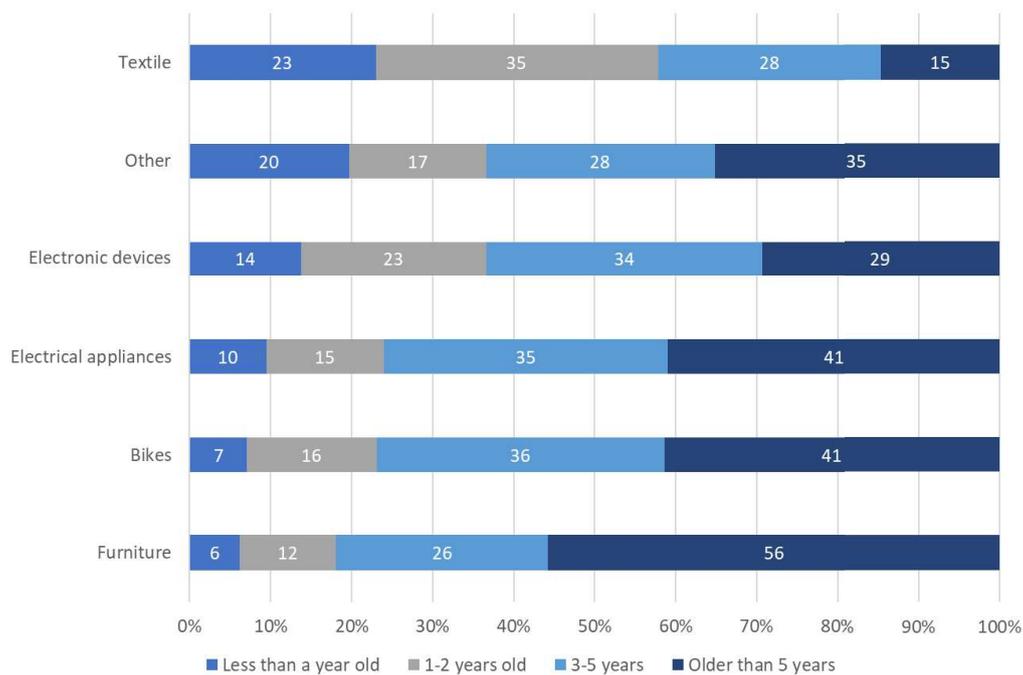

Figure 2.9: Age of consumer goods repaired by category of goods

2.7   Replacement rate

In a Special Eurobarometer looking at attitudes of European citizens towards the environment Europeans were asked which of 14 different environmental activities they had undertaken in the past six months. Separating waste for recycling is clearly the most dominant activity undertaken by two-thirds of Europeans (66%) and 70% of Belgians. Nevertheless, almost a third (32%) of Belgians (and Europeans) stated that they had repaired a product instead of replacing it. This is compared to a quarter of Belgians who bought second-hand products instead of new ones. Suggesting that the replacement rate (i.e., the repair of goods replacing the purchase of a new one) is higher when it comes to repair than the replacement rate of reused goods (i.e. the purchase of reused goods instead of purchasing new ones) if we believe that people understood the question in this literal way.

QA6 Have you done any of the following in the past six months? (Multiple answers possible) %
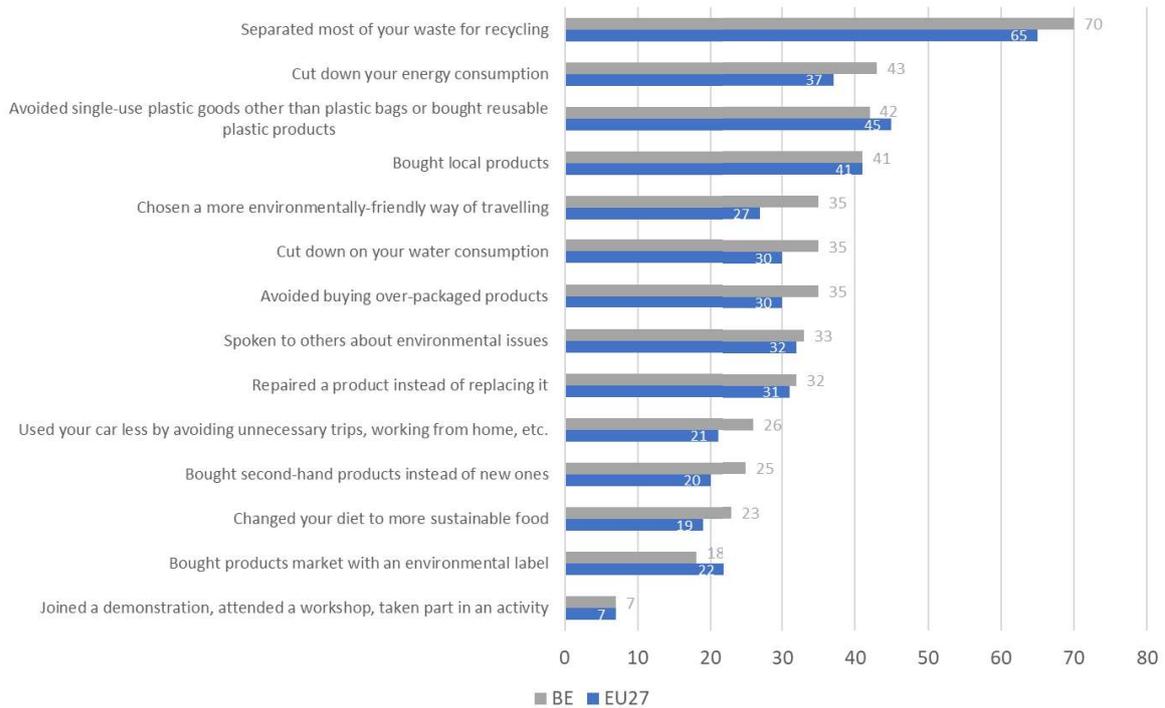
Figure 2.10   Attitudes of European Citizens towards the Environment

Whilst not directly aiming to measuring a replacement rate, it does give an indication that repairing rather than reusing as a strategy to avoid the purchase of new goods may be more common. The difference between repair and reuse is likely to be related to the decision process that is involved in each scenario. In the scenario of repair, the item has 'failed' or is in some way not functioning fully which consequently prompts a consumer decision about whether to repair it or replace it. In the case of reuse the consumer decision can look quite different. (At least some) items are attained due to 'opportunity' rather than out of necessity when consumers see something in a shop or are offered it. Therefore, we might expect repair to have a higher likelihood to avoid a new item being purchased in comparison to reuse. This is not to say that repair is more common than reuse. A CE Centre publication (Delanoeije & Bachus 2020[35]) explored the extent to which the acquisition of reusable goods prevents the acquisition of new goods. Their calculations found that second-hand items (either bought or received) replace newly bought items only for 28% of the goods.

In this study for each item that was repaired by a respondent they were asked whether repairing that item stopped them from purchasing a replacement. In this way we measure whether repairing the item prevented the replacement of that item through a new purchase. In the vast majority of cases this was true. Overall, amongst all consumer goods repaired in almost 79% of cases the repair of the item prevented the purchase of

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35 J Delanoeije, K Bachus - Reuse. The understudied circular economy strategy, 2020 Delanoeije & Bachus (2020). Reuse - The understudied circular economy strategy (cemonitor.be)

a new item. This was especially true for electrical appliances and furniture which are also the largest (and therefore contribute the most to the weight of what is repaired in Flanders). Nevertheless, this does show that the repair of a consumer good does not always replace the acquisition of new goods. Furthermore, it is beyond the scope of this study to explore any indirect rebound effects where any money saved through repair is otherwise spent somewhere else in the economy. Future research could focus on the actions and attitudes of consumers to understand the extent to which they employ repair and reuse strategies and whether there are any rebound effects.

Table 2.3: Replacement rate for each good category

	Furniture	Textiles	Electrical appliances	Electronic devices	Bikes	Other	Total
% of items whose repair prevented a new item being purchased	82.3%	78.1%	82.9%	74.7%	74.4%	68.2%	78,5%

Source: QX7. Did repairing this item prevent you from buying a replacement item?

3 | Economic impact of repair

Together with the circular economy, the 'fixer movement' (Ellen MacArthur Foundation, 2016, Empowering Repair) is gaining momentum. In November 2023, the European Parliament voted on the "Common rules promoting the repair of goods"[36] applicable to ten product categories[37]. Supporting a consumers' right to repair, the rules include a ban on hardware, software or contractual methods of obstructing repair as well as those pertaining to the accessibility of spare parts. These are important factors to enable consumers to repair themselves as well as for independent repairers in the market and other approaches such as fixer-focussed organisations like Repair Cafes.

The previous chapter highlights that these informal activities are the most important channel of repair in Flanders. Here we turn to estimating the total value of repair in Flanders by examining economic indicators of both time and money. Up until now the value of informal repair to the economy has been limited to specific categories of goods (primarily EEE) and this chapter addresses that gap.

3.1   Expenditure on repair

As described in section 2.4, informal channels are more prevalent in repair in Flanders compared to formal channels when looking at the total volume of repairs. To give a more complete picture of repair activities, it is thus necessary to include money spent by consumers on both formal and informal repair to get a clearer picture of the (economic) importance of repair activities. In the survey, for each good repaired successfully, participants were asked to indicate how big the monetary investment was. We clarified that this investment could be in cash (e.g. by paying a price for the repair work, buying spare parts or necessary tools), but can also pertain to non-cash rewards[38], especially when the repair is done through a more informal channel (e.g. giving a box of chocolates in return). For the vast majority of items (80%) respondents were able to provide a monetary value associated with each repair which were then used to calculate the expenditure through different channels and types of goods. Nevertheless, for a fifth of items respondents did not know what they spent on having the good repaired and no assumptions about that value have been made which means the calculations here are conservative.

Extrapolated to the entire adult population in Flanders, the total expenditure on repairing goods in Flanders during the 12 months prior to the survey amounted to **€271**

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36 https://www.europarl.europa.eu/news/en/press-room/20231117IPR12211/new-eu-rules-encouraging-consumers-to-repair-devices-over-replacing-them

37 The ten categories consist of bicycles and nine other product groups currently covered by ecodesign requirements: smartphones and tablets, washing machines, dryers, dishwashers, fridges, displays, welding equipment, vacuum cleaners and servers.

38 This was worded in terms of 'costs paid in kind' and therefore costs of worktime were not included here, and the time investment was asked about separately amongst those who did the repair themselves.

million, or € 49.55 per adult[39]. It is important to remember that house renovations and wider scope repairs such as car repairs were excluded from the scope given the focus on household consumer goods. A wider scope would assume a substantially higher figure spent on repair in Flanders.

Figure 3.1 gives a breakdown of this total expenditure on the repair of goods in Flanders by channel. The largest share of this money (almost 80%) was spent on repairs where professional actors were involved. The bulk of expenditure went to independent professional repairs (38%), closely followed by repairs that were carried out by the seller of the product (31% of the total money spent on repairs in Flanders). Repairs done by manufacturers amounted to 10% of the total money spent.
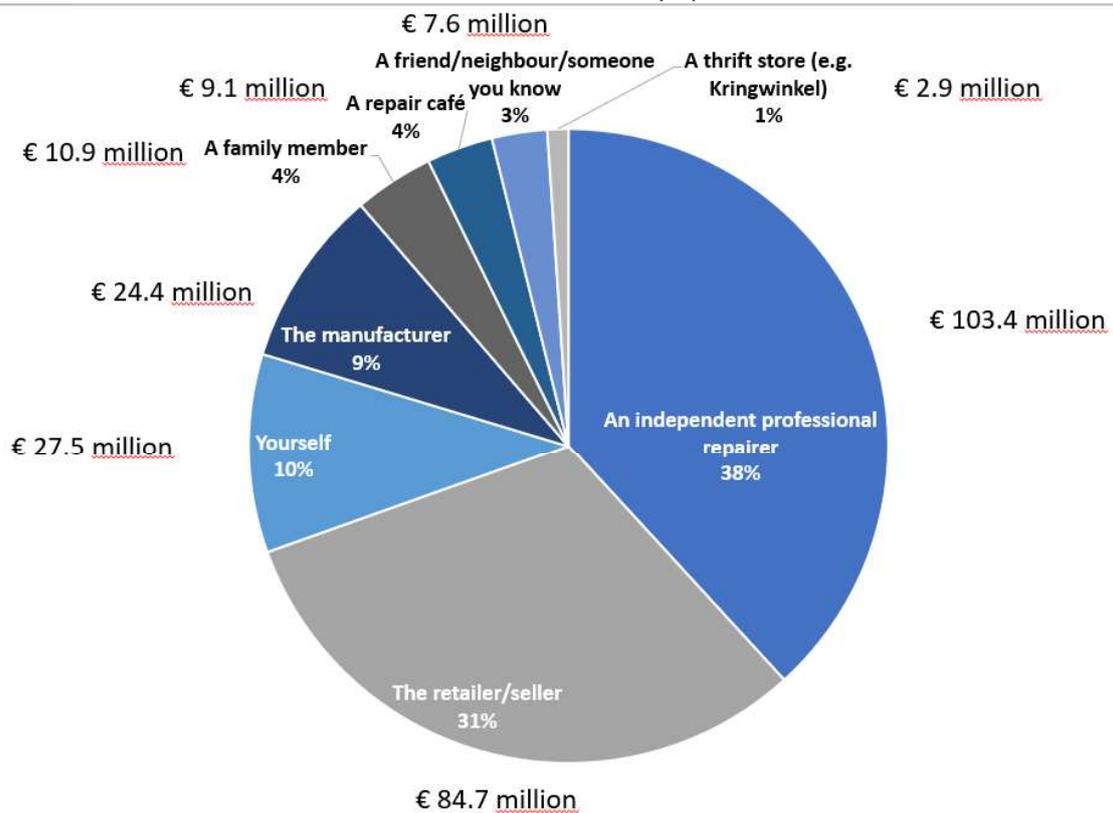
Figure 3.1: Share of the different repair channels in the total amount spent on repair in Flanders.

As seen previously in the policy brief outlining the volume of workers in the circular economy as part of the MICHELLE research project[40], the repair sector (defined to include both commercial and consumer repair) is the one exception when it comes to economic growth measured by employment numbers compared to other circular sectors. All other circular sectors show stronger growth in employment than the overall Flemish economy since 2011. Therefore, it is an important finding that most of the expenditure on repair was spent on the services of independent professional repairers given that this sector has been the exception to economic growth[41] compared to other

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39 The yearly Household Budget Survey also includes some expenditure categories relating to repair. The sample size for respondents to these categories is small (i.e., less than 50 households), and not all categories are pure repair of consumer goods and therefore a comparison is not drawn here.

40 Multani, M, Bachus, K., & Ampe, K. 2021 'Circular jobs in Flanders' policy-brief-circular-jobs-2021-final-eng-mm.pdf (kuleuven.be)

41 Measured as the growth in employment numbers.

circular sectors, and in comparison to the Flemish economy itself. Despite the slower economic growth of the repair sector compared to other circular sectors and the Flemish Economy as a whole, independent professional repair services are an important channel for the Flemish population. This could potentially indicate an opportunity for policy interventions and business strategies to stimulate growth in this sector. Measures to boost repair must consider the pivotal role of these independent repair professionals and reliance some portions of the Flemish population have on them.

Overall, we see that non-professional repair seems to be comparatively inexpensive, amounting only to 20% of the total expenditure of repair, while we see that 65% of all repair instances were carried out non-professionally. This contrast would be even bigger if repairs that were reported to cost zero because they were under warranty but still generate an economic cost. The main explanation for this contrast is that labour costs are an important part of the cost of repair, which are often not accounted for in non-professional situations, and that more complex products requiring expensive spare parts are possibly done more often through the professional channels.
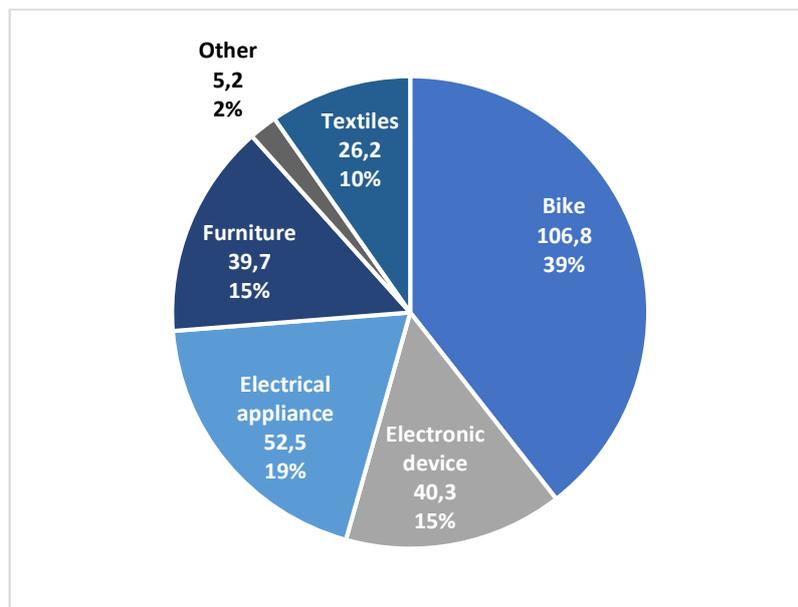

Figure 3.2: Expenditure over the categories of goods, in € million

Figure 3.2 investigates the amount of money that was spent between different categories of goods that were repaired in Flanders. Unsurprisingly, bike repair comes forward as the largest category in terms of expenditure, amounting to almost 40% of the total. The second biggest category are electrical appliances, with a share of 19% in the total amount of money spent. Next digital devices and furniture taking up both almost 15% of the total money spent on repair. Repair of textiles take up about 10% of the total money spent, despite accounting for a much larger share in the total amount of repair done in Flanders. These shares are calculated without taking into account the amount that is spent on repair for products that were repaired under warranty given that those were borne by the manufacturer and not captured here.

Repair costs vary depend on the type of good and the repair channel utilised. Additionally, when goods are in warranty and they need repair, legal or extended warranty for these goods should influence the cost of repair. Of course, a good still covered by warranty could also need repair that is not covered by (legal) warranty, e.g., when the damage is not due to a fault in the product itself but rather induced by user behaviour, like when dropping a phone or driving your bike into a gutter. While repairs covered by the warranty are an important source of repair, including these in the average cost of repair would skew the average cost of repair strongly. As such, observations where respondents indicated that the item was within warranty at the moment of repair and the reported cost for repair was zero were excluded from the following discussion.

Table 3.1: Average expenditure on the repair of goods by channel and good

	Furniture	Textiles	Electrical appliances	Electronic devices	Bikes	Other
Manufacturer	€ 57.5	€ 10.8	€ 154.1	€ 99.1	€ 129.1	€ 112.3
Retailer/seller	€ 151.5	€ 32.9	€ 123.9	€ 134.3	€ 95.2	€ 90.9
Independent professional repairer	€ 263.1	€ 23.3	€ 188.8	€ 102.3	€ 89.0	€ 38.0
Formal channels	**€ 157.4**	**€ 22.3**	**€ 155.6**	**€ 111.9**	**€ 104.5**	**€ 80.4**
Family member	€ 15.3	€ 1.2	€ 13.6	€ 13.6	€ 22.8	€ 8.3
Friend/neighbour	€ 18.7	€ 7.7	€ 26.2	€ 36.4	€ 25.0	€ 20.0
Yourself	€ 12.2	€ 2.2	€ 15.4	€ 33.0	€ 17.9	€ 9.4
Informal channels*	**€ 15.4**	**€ 3.7**	**€ 19.7**	**€ 27.7**	**€ 21.9**	**€ 12.6**

* Excluding repair cafes and thrift stores due to small sample sizes

Table 3.1 gives an overview of the average cost of repair for the various categories of goods for the different channels. As noted before, repair done through informal channels was on average less expensive than through formal channels for all categories of goods. Repair carried out through formal channels was (on average) four to ten times more expensive than repair done through informal channels. While the nature of repairs done by people informally, and repairs that are outsourced to formal channels are possibly differing in complexity, time allocation or the need for spare parts, we can expect that the true economic value of self-repair is underestimated by respondents (e.g. by not considering their time spent or previous experience as a monetary value). To get a better picture of this value, we calculated an additional estimation of economic impact. This measure was obtained by attributing the average expenditure on formal channels (independent professional repairers, the manufacturer or the seller), also to

the informal channels (self-repair, a family member, or a friend/neighbour/someone you know). Thrift stores and repair cafés were not taken into account in calculating the average expenditure, as there were few reported expenditures in these categories. Using this measure, the economic value of repair in Flanders amounts to **€ 582.27 million**, or more than double the reported value. Though this estimation is biased upwards due to the allocation of the same value to formal and informal instances of repair, it gives an indication of the economic importance of repair in Flanders.
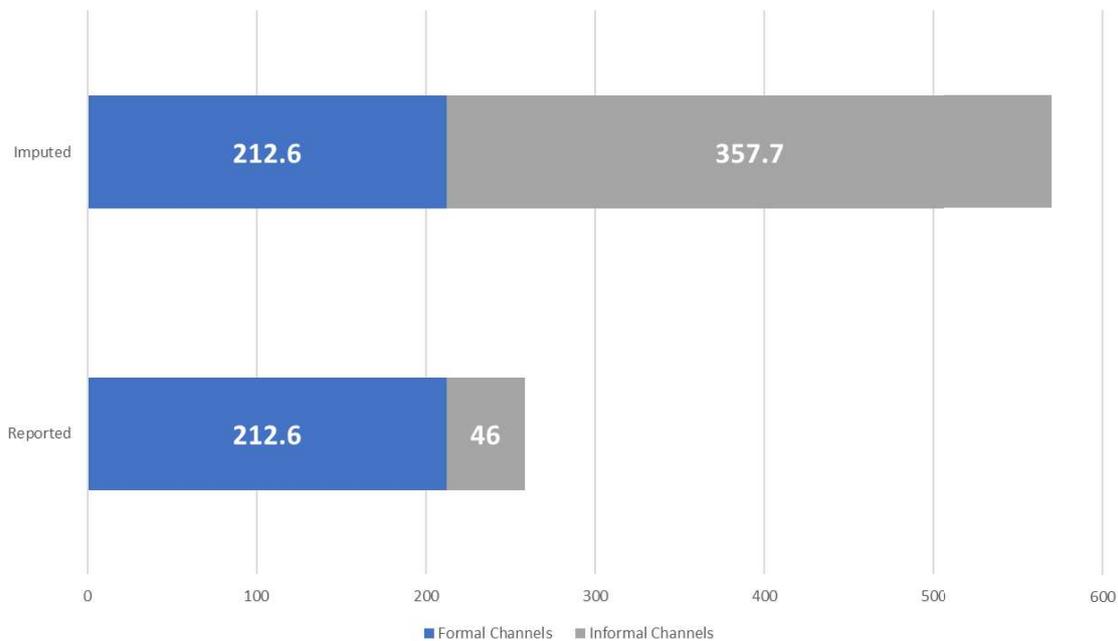

Figure 3.3: Expenditure on repair in Flanders as reported and imputed based on the cost in the formal sector, in € million

3.1.1 Comparing to other sources on the economic value of repair

The Mobius study conducted for Recupel on the repair and reuse of EEE mentioned earlier in this report provides an estimation of the total turnover of repair for electric and electronical devices. They made a calculation based on the number of repairs (identified through a survey) by device type and multiplied it by a cost per repair based on interviews with key stakeholders. That study estimates a total turnover within Belgium of €118,9 million, both for professional and informal repair (excluding repair cafés) of EEE. They estimate that €88.5 million should be attributed to the professional players, while €30.4 million (26% of total turnover) is generated by informal repair.

Based on the expenditure reported by respondents in our survey in the categories digital devices and electrical appliances for all channels without the repair cafés (since these were not included in the Mobius study), we estimate that for the whole Flemish population, a total of €92.8 euro was spent on repairing EEE. Of this €92.8 million, €74 million is attributed to professional repair, while €19 million can be attributed to informal repair. Overall, the percentage of the expenditure attributed to informal repair

is almost six percentage points higher in the Mobius study (26% vs 20%). However, the calculations made by the Mobius study were done using an amount for the value of informal repairs equal to the amount attributed to professional repair (how much turnover would they have generated when they would have been done in the professional repair circuit?) while in our survey we asked respondents to indicate actual costs. As such this difference can be explained by this differing approach.

Eurostat provides a number of structural business indicators at the EU level and for each Member State by NACE code, including NACE 95 'Repair of computers, household and personal goods'. It is based on surveyed enterprises and model-based estimations for non-surveyed enterprises. Trend data for 32 economic indicators for structural business statistics is available for Belgium as a whole between 2008 and 2022 (data for 2022 is considered provisional). In the Mobius study for Recupel mentioned above, the figures from Eurostat structural business statistics data was reported to provide an alternative measure of the total turnover for the NACE categories that have a direct link to household EEE repair activities[42]. Those figures shows that, in Belgium, companies declaring these NACE codes as their primary NACE code generate a turnover of €275 million (on average between 2016-2019) which is considerably higher than the amount calculated based on the volume of EEE repair from their survey estimates.

Of the 32 structural business indicators, five of these[43] are made available at the regional level between 2008 and 2020. Turnover is not one of them. An indicator of turnover is only available at the country level for Belgium. Therefore, it is not possible to demonstrate the trend in turnover amongst Flemish companies whose NACE code corresponds to broader NACE 95 category of the repair of consumer goods without making some assumptions.

The figure below represents the structural business statistics on net turnover in the overall consumer repair sector and not only EEE repair (i.e., all activities amongst companies that declare one of the NACE95 codes as their primary activity) for the whole of Belgium since 2008. This suggests a sharp decline in the overall repair sector between 2008 and 2012, recovery between 2015 and 2019 with a 20.8% increase in turnover during those years. The COVID-19 year of 2020 saw another sharp decline, but the sector appears to have recovered significantly based on these (provisional) figures to return to the level of 2008. If we look at the number of people employed in the repair sector based on these statistics, we can see that the numbers employed in Flanders represents between 66% and 69% of all repair sector workers between the years 2016 and 2020. Whilst we cannot assertion that turnover in Flanders also corresponds to two-thirds of the total turnover, if this were to be true then turnover of companies in the Flemish consumer repair sector would be approximately 318.3 million in 2021.

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42 NACE 95.11, 95.12, 95.21, 95.22.
43 Statistics | Eurostat (europa.eu)
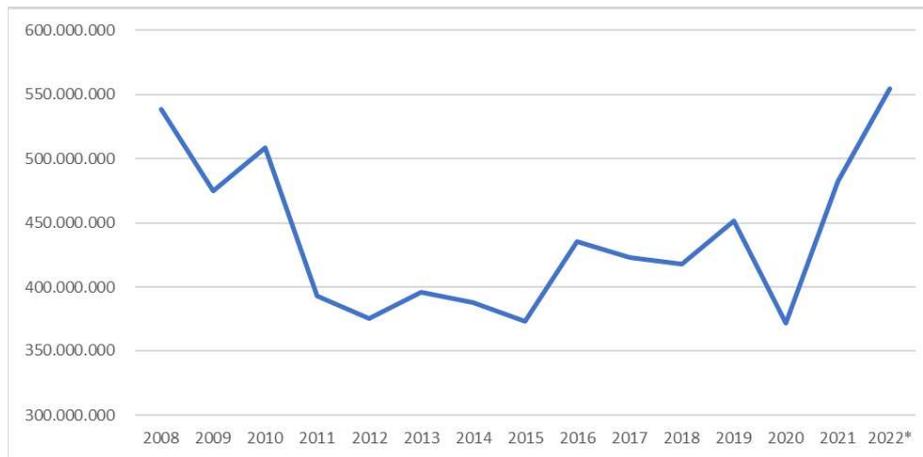
Figure 3.4: Turnover of the repair sector NACE 95 in Belgium according to enterprises statistics in € million

We then turned to Bel-first data to identify specifically the turnover of companies in Flanders based on the annual accounts of all companies that were identified within the dataset as having a principal NACE code of 95 (the repair of computers, personal and household goods)[44].

As previously discussed in the MICHELLE report which explores the methodological considerations of identifying 'circular' companies[45], there are limitations associated with utilising NACE codes to identify circular sectors which apply here in the case of identifying consumer repair. These include inaccuracies in declared NACE code/activities and that all economic indicators (such as turnover or number of employees) are attributed to the principal NACE when in reality this may only represent a portion of what they do. For example, repair shops that offer the sale of goods report their total revenue and not only revenue attributed to repair. This could explain the difference between survey estimates of expenditure on repair and reported turnover.

Bel-first indicates that in 2021 there were 3,887 companies operating in Flanders with a principal code that corresponds to the consumer repair sector. However, of these 3,887 companies, turnover figures are reported in the database for less than 25. This amounts €126 million but cannot be considered to reliably capture total turnover.

Finally, consideration was given to the reported turnover of the repair sector according to VAT returns. VAT returns are filed quarterly which provides a frequent update on a given company's financial status and includes all amounts corresponding to the sale of goods and services by the VAT payer. Therefore, VAT returns may be considered a reliable metric although again, this data is only available for Belgium as a whole, and the

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44 The Bel-first database makes a distinction between 'principal', 'primary' and 'secondary' NACE codes. Unlike primary and secondary codes, the 'principal' code in Bel-first is assigned to each company only once (multiple codes are not assigned). It corresponds to the 'main' activity of the company. Companies that list one economic activity automatically have this activity as their principal NACE code. If the company is active in two different economic sectors the principal NACE code describes the activity that accounts for more than 50% of the total added value. If the company has more than two economic activities, the economic activity with the largest share of added value is determined to be the 'principal' economic activity of the company.

45 Measuring Circular Employment: An exploration of methodologies and indicators

same caveats regarding the limitations of using NACE codes to identify consumer repair apply. The below figure indicates the trend in VAT returns[46] within this sector over time and demonstrate an almost 50% decline in the sector since 2011 to €444,7 million in 2021 (compared to the €482 million estimated in the Eurostat structural business statistics). If Flanders accounts for two-thirds of this revenue that would equate to €294 million in 2021.
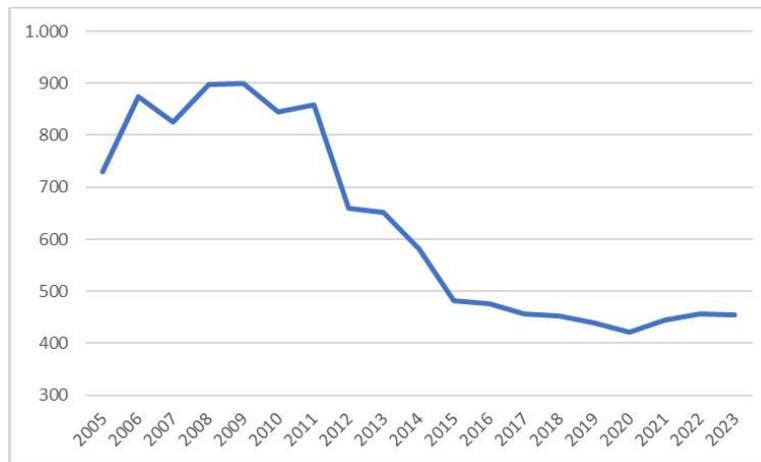
Source Statbel (Directorate-general Statistics - Statistics Belgium)
Figure 3.5: Turnover of the repair sector NACE 95 (2008) in Belgium according to VAT returns in € million

In summary, establishing whether repair is a sector that is currently in decline, stagnant or growing in Flanders is difficult to assertion based on business statistics given the limitations stated above. Looking at the most recent picture, based on VAT returns and an assumption that two-thirds of that revenue is generated by Flemish companies, turnover in 2021 was almost three times the amount estimated to be spent by Flemish adults (in 2023) on independent professional repair services. However is it not possible to directly link expenditure on repair with business statistics given that they are based on two very different perspectives; consumers remembering what they spent on repair whilst company statistics are linked to all activities (including sales) and not only repair activities and the repair sector being quite small in comparison to other broader sectors making it more prone to a wider range of estimates.

At a minimum the results from this survey suggest that the repair economy, both formal and informal is worth upwards of €271 million, with more than a third of this being spent on independent professional repair (€103 million). Given the amount of engagement in informal repair activities amongst Flemish adults should we place the same value on informal repair as formal it is worth more than double this (€582 million). Informal repair activities carried out by the population provides significant value to the Flemish repair economy.

3.2   Time spent on repair

To assess the economic impact of repair, we should not only consider the amount of money spent, but also the time people invest in repairing their goods. While it would be

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46 be.STAT (fgov.be)

interesting to investigate how much time spent on repair depending on the channel, people often do not have a good view of how long a repair takes when they do not do it themselves. For example, when people bring their coffee maker to a retailer to be repaired, it takes anywhere from a day to a few weeks to get it repaired. However, this period does not necessarily reflect the amount of time that was invested in repairing the good. The same logic applies to all channels except for repairs done by people themselves. As such, we asked people in the survey how long it took to repair a good when they indicated they repaired the good themselves. While the time it took people to repair their goods differed from a few minutes to several hours, on average a repair took between one and two hours. Digital devices took notably longer to repair, on average 2 hours and 10 minutes. Textiles on the other hand seemed to be less time-consuming to repair, taking on average 1 hour and 10 minutes to repair. The other categories of goods were in between these two categories.
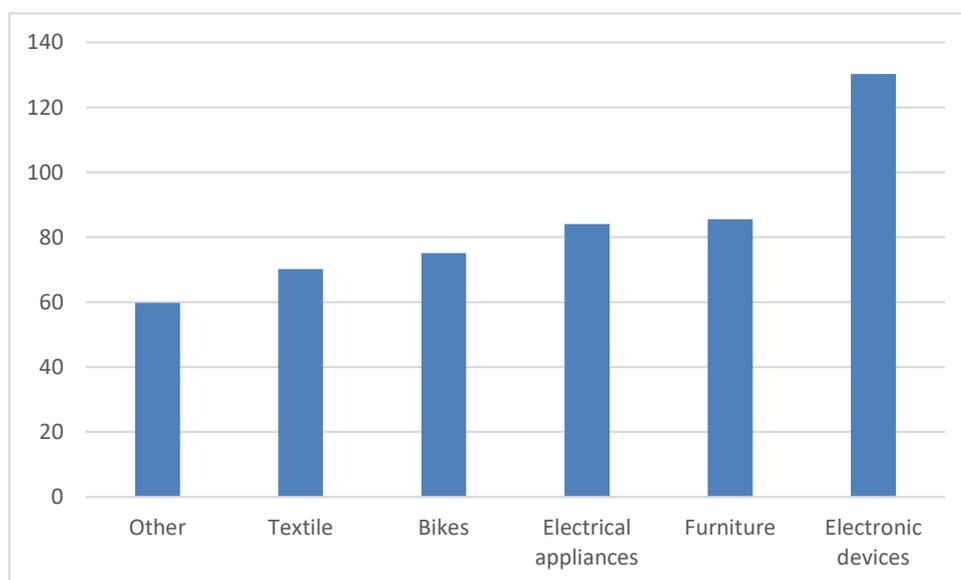

Figure 3.6: Average time to perform a repair done by the respondents themselves

The average time it takes to repair something does not tell the whole story. As discussed in chapter 2, the incidence of repair for some goods is much higher i.e., on a yearly basis, there is a much larger quantity of textiles and bikes repaired than there are electronic appliances repaired. Additionally, not all categories of goods are repaired by people themselves as much as others. While furniture and textiles are quite often repaired by people themselves, bikes and electronics are much less repaired by people themselves. To assess the economic impact, we extrapolated the time it took respondents to repair a good to get a grasp of how much time all people in Flanders spent in total on repairing their own consumer goods. To make this total amount of time more concrete, we converted this to full-time equivalents[47]. This allows us to compare the total amount of time invested by people repairing their own consumer goods to other sectors, such as the amount of FTE employed by independent professional repairers.

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47 We converted this by supposing a full-time equivalent is equal to 36,9 hours based on the Labour Force Survey statistics for Belgium Statistics | Eurostat (europa.eu) for 46 weeks (assuming 4 weeks holiday entitlement and 10 days of public holidays).
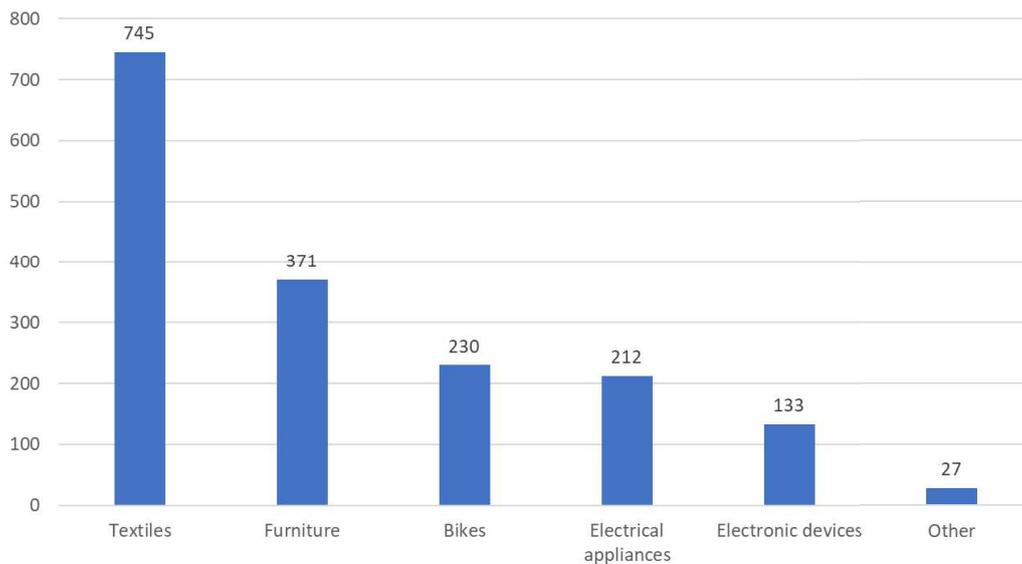
Figure 3.7: Total time spent on repair by participants extrapolated for the adult Flemish population, in full time equivalents

In total, repair done by people themselves equates to about 1700 FTE. Almost half of this labour volume is accounted for by the repair of textiles amounting to more than 700 FTE. The self-repair of furniture is the second largest category in time spend and amounts to almost 400 FTE. The repair of bikes by people amounts to 230 FTE, while the repair of appliances is 212 FTE. The repair of electronic devices, despite being on average the most time-consuming per repair is the smallest category, amounting to 133 FTE, because these self-repairs are less common than for some other categories of goods.

Previous research on employment in the circular economy[48], estimated the employment in the formal repair sector to equate to 6304 FTE in 2020. However, this estimation includes not only the repair of consumer goods, but also includes non-consumer repair activities like machinery, agricultural appliances, and ships. When we look only into employment in NACE 95, which is the formal repair of computers, consumer and household goods, this sector amounts to 1073 FTE in 2021[49], or 1422 working people (including part-time and self-employed persons)[50]. Based on the data from our survey, we thus estimate that the time spent on informal repair of (all) consumer goods is more than 1.5 times higher than the time spent in the formal repair sector. Intuitively, we would expect people repairing their own goods to be spending much more time to repair their goods compared to a skilled professional as well as the fact that repair is primarily an informal activity. Nevertheless, these figures are difficult to compare, since no separate activity codes for the repair of furniture or textiles exist, and some companies possibly operate their repair services as auxiliary activities, while having a different NACE code. Furthermore, the repairs people are doing themselves and the ones they outsource are probably different, both in terms of the goods they repair (electronic devices or textiles), and in the nature of the repair (i.e., how difficult it is). The type of repair activities captured under NACE 95 also relate primarily to the

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48 Multani, M., Bachus, K., & Ampe, K. (2021) Policy brief: Circular jobs in Flanders
49 Own calculation, based on Belfirst data.
50 Own calculations, based on KSZ. Data for the last quarter of 2021.

repair of electronics and do not capture textile and furniture repair in an accurate way. Nonetheless, the message is that the repair of consumer goods by personal efforts does amount to an important activity.

4 | Understanding who repairs their goods

While the primary purpose of the survey was to gain more insight into the volume and nature of goods repaired in Flanders, questions on the socio-demographic profile of respondents, their behavioural and attitudinal profile and where they acquired their repair skills were also included in the questionnaire. As such, it is possible to gain insight into who repairs compared to who does not repair, and if this is driven mainly by socio-demographic characteristics or if attitudinal and behavioural factors play a more important role.

At the start of the survey, a core set of demographics was asked to ensure the sample matched key characteristics of the Flemish population. Information on age, the place where they live, gender and educational attainment was collected for all respondents who started the survey, including those who did not have a consumer good repaired during the past 12 months. Of all these respondents, 40% did not have anything successfully repaired in the past 12 months and were not asked further questions. 60% had a consumer good successfully repaired in the 12 months prior to the survey and this sample proceeded to provide comprehensive information on those repairs as well as more detailed socio-demographics, attitudes and behaviours. As mentioned in chapter 2, we further distinguished between self-repairers (19% of the population) and outsourcers (41% of the population) based on whether they repaired most of their goods themselves or outsourced most of their repairs to others (either formally or informally).

For the core set of demographics (age, gender, region and educational attainment), we can make a comparison between people who did not have anything repaired at all in the past 12 months, people who outsourced most of their repairs, and people who self-repaired at least half of their goods.

For the other variables, questions were made comparable to other surveys which have been administered at the national or regional level. In these cases, we can make a comparison of the self-repairers, the people who outsource most of their repairs, and the general population. Statistically significant differences are reported in section 4.1. According to the responses to our survey, no significant differences seemed to occur when looking into where people live (both postal codes and self-reported urbanisation), their occupation or family composition.

In section 4.2, attitudinal and behavioural factors of self-repairers and outsourcers are compared to the general population. Finally, in section 4.3, we take a closer look at respondents stating they have repaired themselves and examine where they acquire the necessary skills to successfully repair their goods.

4.1 Socio-demographic profile

4.1.1 Gender

At the aggregate level, the likelihood of being a self-repairer, someone who outsourced repair or did not have anything repaired is not related to gender. 21% of men were self-repairers compared to 18% of women, whilst 42% of women had no repairs done compared to 38% of men; differences that are not statistically significant.
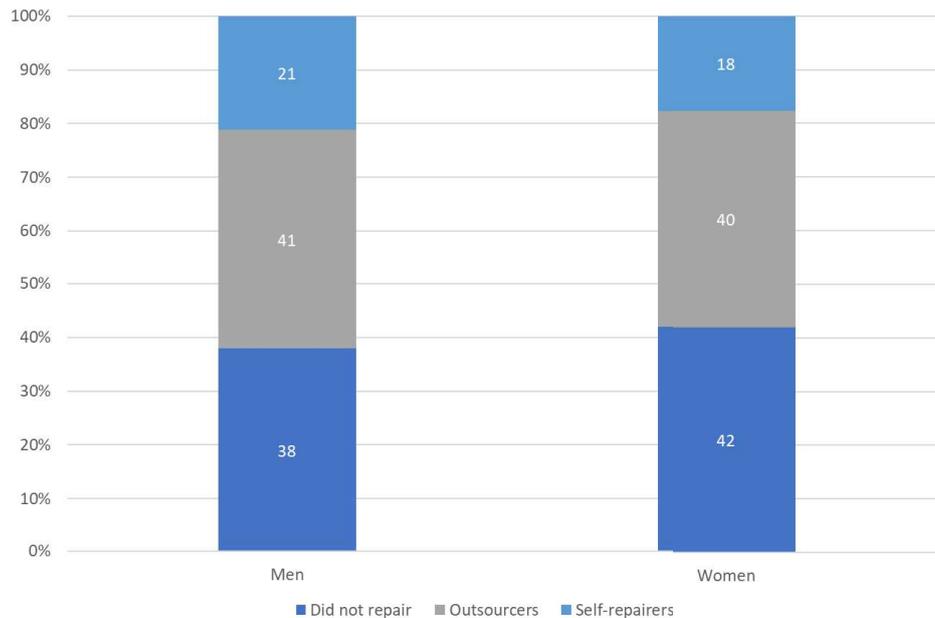

Figure 4.1: Proportion of men and women who had nothing repaired, are self-repairers or outsourcers

However, if we go beyond the aggregate level and look specifically at the types of goods repaired, we see a clear pattern. Previous research on repair suggests that when it comes to repair activities, gendered stereotypes of men doing mechanical repairs and women sewing, seem to be confirmed in Flanders (e.g. Rogers et al., 2021).

Women are significantly more likely to have had a textile item repaired (whether this was self-repair or outsourced) than men. Nearly 4 in 10 (39%) women have had at least one textile item repaired in the 12 months prior to the survey compared to around 2 in 10 men (23%). When it comes to both bikes and electronic devices, men are more likely to have had these items successfully repaired. The difference is most pronounced for bikes with a third (34%) of men having had a bike repaired compared to a fifth of women (20%). Men are also more likely than women to have had an electronic device repaired (16% compared to 10% of women). Interestingly, there are no gender differences when it comes to the incidence of furniture, electrical appliances or 'other' types of goods.
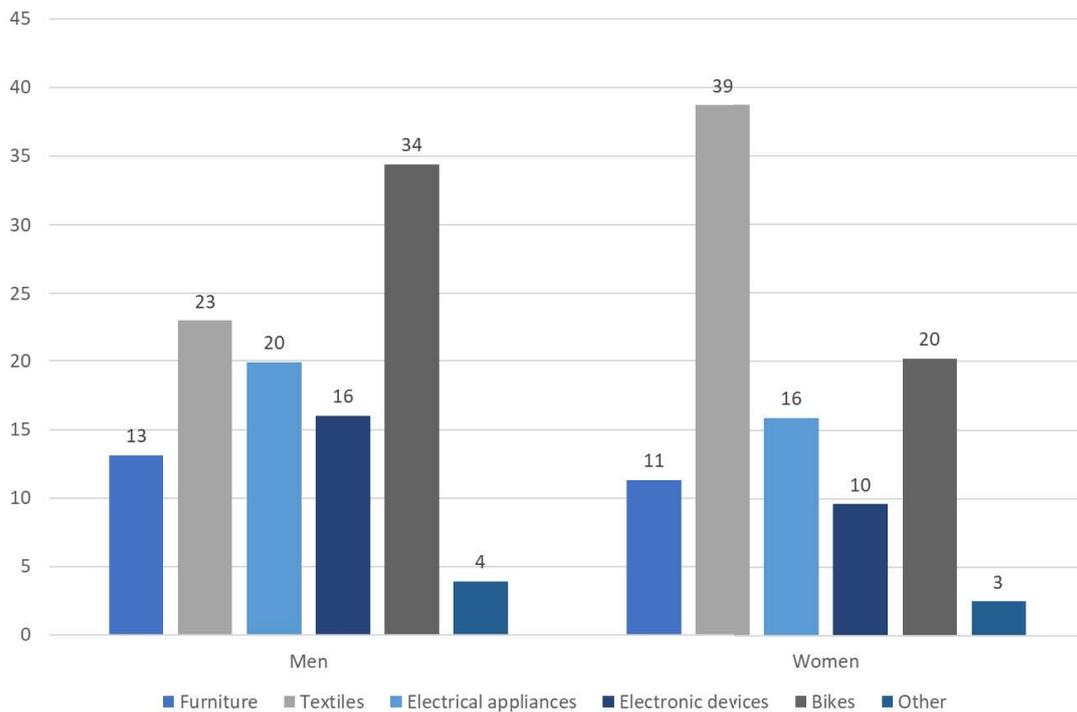
Incidence of men and women having had each category of consumer goods repaired in the 12 months prior to the survey

Whilst the above illustrates a number of gender differences, this becomes clearer if we take into account the total volume of consumer goods that are repaired and not only the incidence of having had something repaired between men and women. Again, it is clear that of all goods women had repaired, over half of them were textiles. Whereas amongst all consumer goods that men had successfully repaired there is more of a spread amongst various categories of goods, though textiles also feature strongly together with bikes.
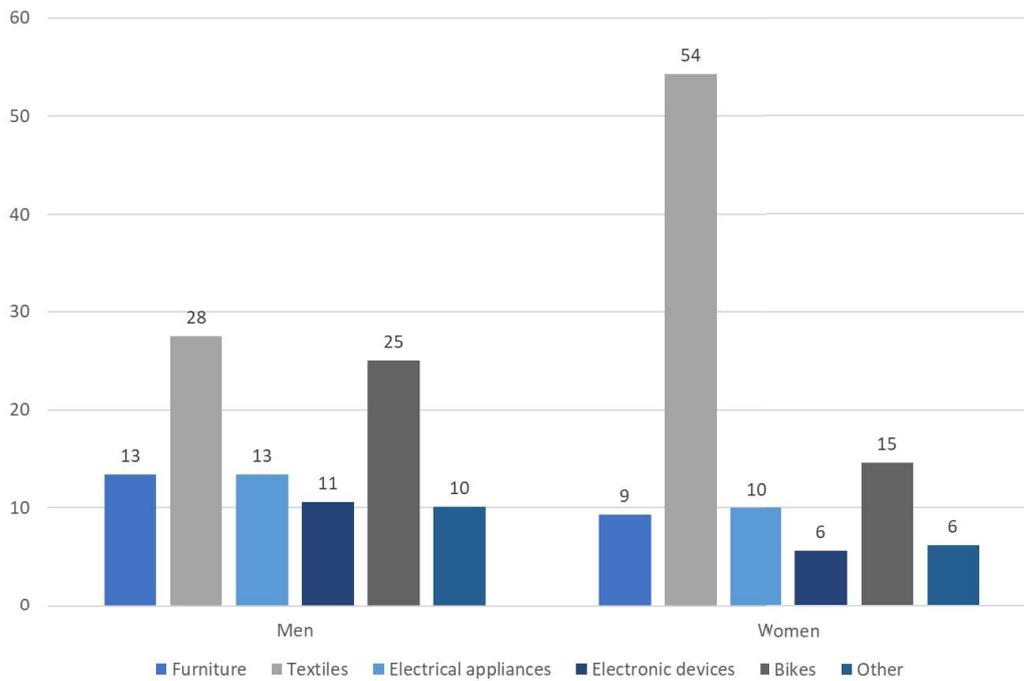
Figure 4.3: Percentage of all repaired goods by each gender and the type of good

In terms of the different channels men and woman use, Figure 4.4 provides an overview of the proportion of repaired goods repaired through different channels by men and woman. It becomes clear that men rely more on themselves in comparison to women. Men are also more reliant on formal channels of repair than women who are more reliant on family and friends for the repair of their goods. Both genders utilise independent professional repairers to the same degree.
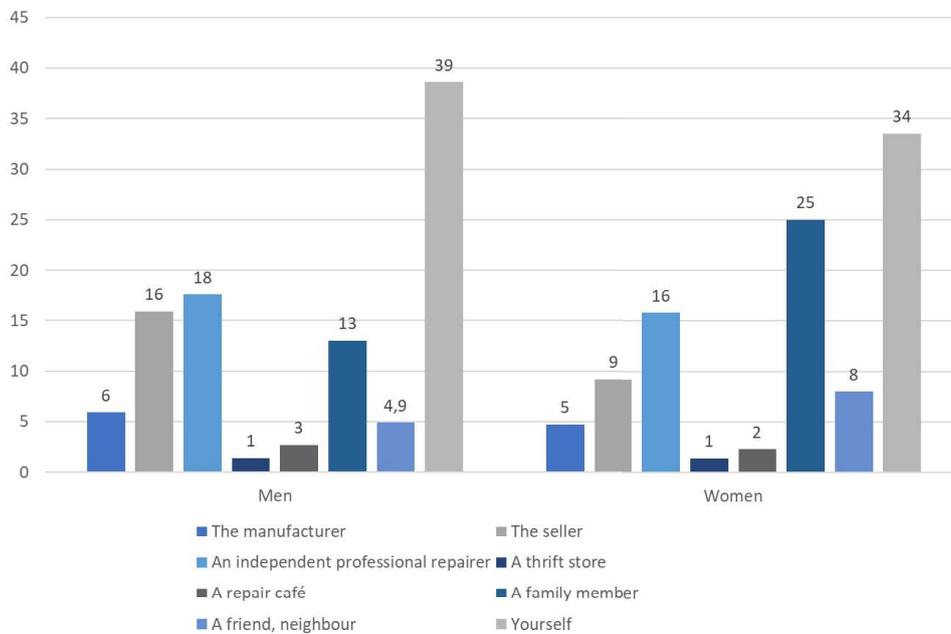
Figure 4.4: Percentage of goods repaired by each gender and the channel used

The pattern of men relying either on themselves or formal channels and women relying on informal channels holds across most types of consumer goods. Men relied on themselves for the repair of all categories of their goods more so than women and women relied more on outsourcing repair to informal channels than men apart from textile repair. In the case of textiles, men more commonly had the family/informal channels conduct the repair. Women show the opposite pattern. They are mostly self-reliant when it comes to textiles, which makes up a significant share of repairs in Flanders. Men were more reliant on formal channels compared to women when it came to furniture and textiles. However, there is no difference between the genders when it came to reliance on formal channels to repair bikes and electrical appliances.
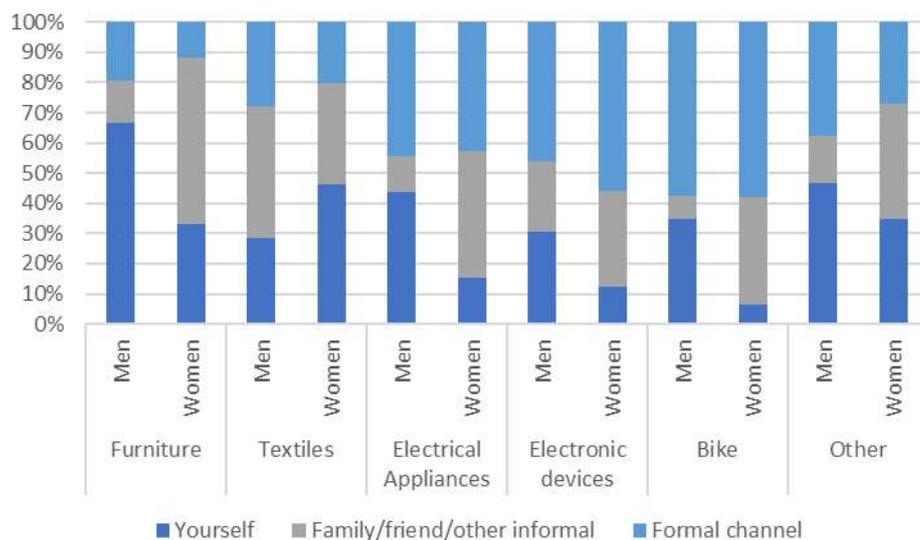

Figure 4.5: Gendered strategies to self-repair and outsourcing to informal or formal repair (proportion of goods)

4.1.2   Age

The results suggest that as people age, they are less likely to repair their goods. Not having anything repaired rises from around a quarter of the youngest age group (18–24-year-olds) to half of those aged 65 or older. Meaning that younger age categories are more likely to repair, but do they do it themselves or do they outsource it? The clear answer is that outsourcing it to someone else is the preference. Almost two thirds (64%) of the youngest age group of adults in Flanders (18–24-year-olds) outsourced some of the repair of their items compared to less than half of all other age groups. This is in starkest contrast to only a third of those aged 55 and older who could be described as 'outsourcers'. Interesting, it is the age category 55-64 years old that is most likely to have conducted at least half of their repairs themselves at almost a quarter of this age group. Meaning that this group is almost as likely to have had something repaired or not, but in the case where they have had something repaired, they are most likely amongst all age groups to repair it themselves.
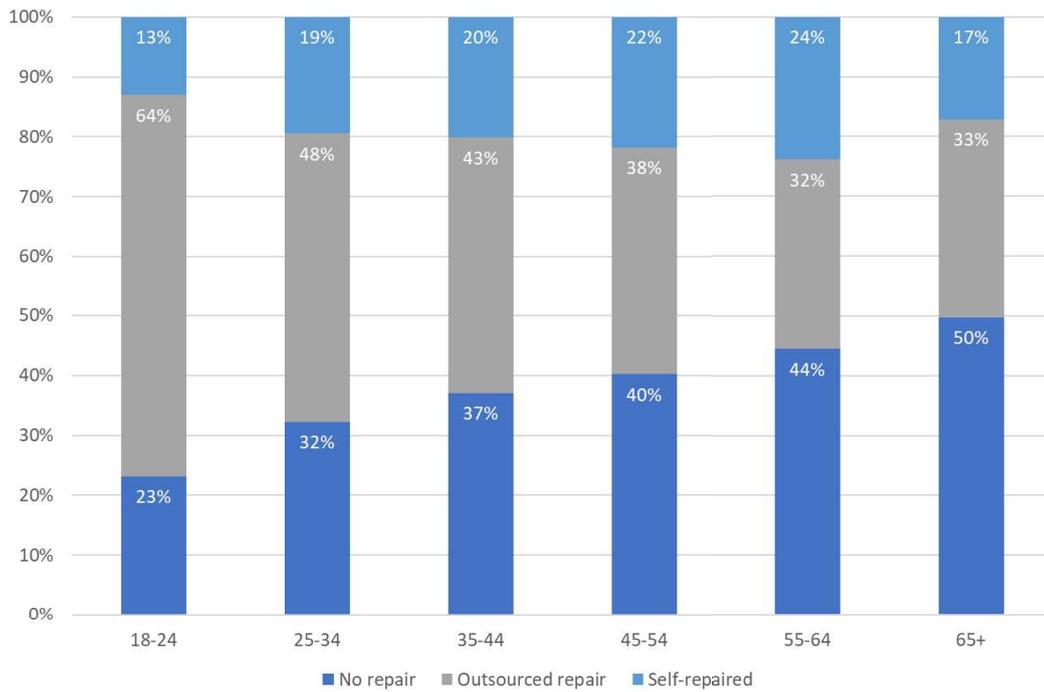
Figure 4.6: Proportion of each age group that did not repair anything, outsourced repair(s) or self-repaired consumer good(s) in the 12 months prior to the survey

This outsourcing pattern of the youngest generation becomes even clearer when looking at each category of consumer goods. The outsourcing pattern of young people becomes clear - young people had family do their repairs and do not outsource to formal channels, especially when it comes to furniture and textiles. Those who were middle aged repaired their own digital devices and bikes. All generations relied on formal channels to repair electrical appliances with self-repair being least common for those in the youngest age group.
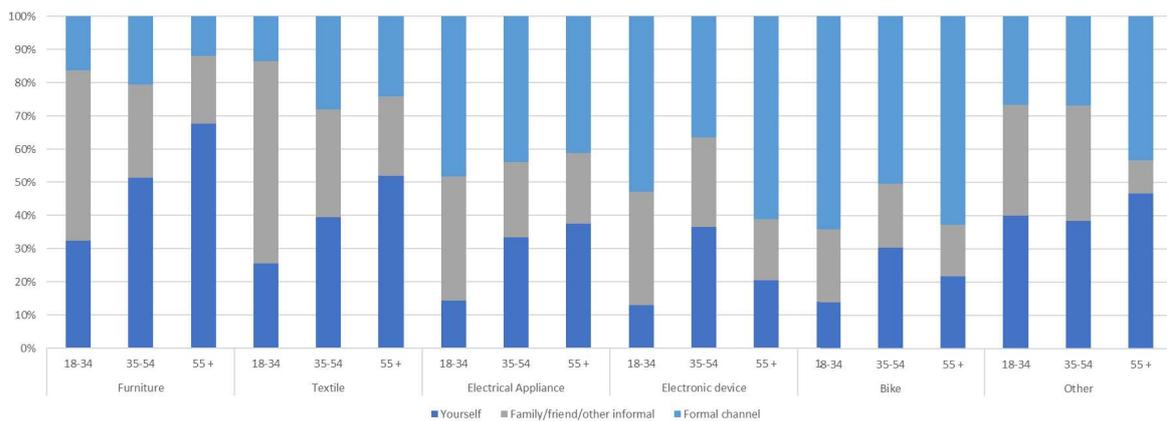
Figure 4.7: Generational differences in the self-repair and outsourcing to informal or formal repair (proportion of goods)

Given that the younger generations are more likely to have their consumer goods repaired we do not report here the differences between age groups and the incidence of having each category of goods repaired. It shows the overall trend that young people

are more likely to have their goods repaired for almost all categories of goods given their tendency towards repair behaviours (with the exceptions of bikes where it is simply that the older generations above 55 that are less likely to have had a bike repaired compared to other age groups and electrical appliances where there is no clear pattern relating to age).

What is interesting to look at is the total volume of goods repaired by each age group and the composition of that volume by type of good. Here we find that even though younger generations are more prone to repair behaviours, if we look at what they repair, there are almost no consistent significant patterns that would suggest that the proportion of what they repair differs from any other age group. Nevertheless, the repair of textiles as a proportion of all repair goods by each group is significantly higher amongst those aged 25-34.
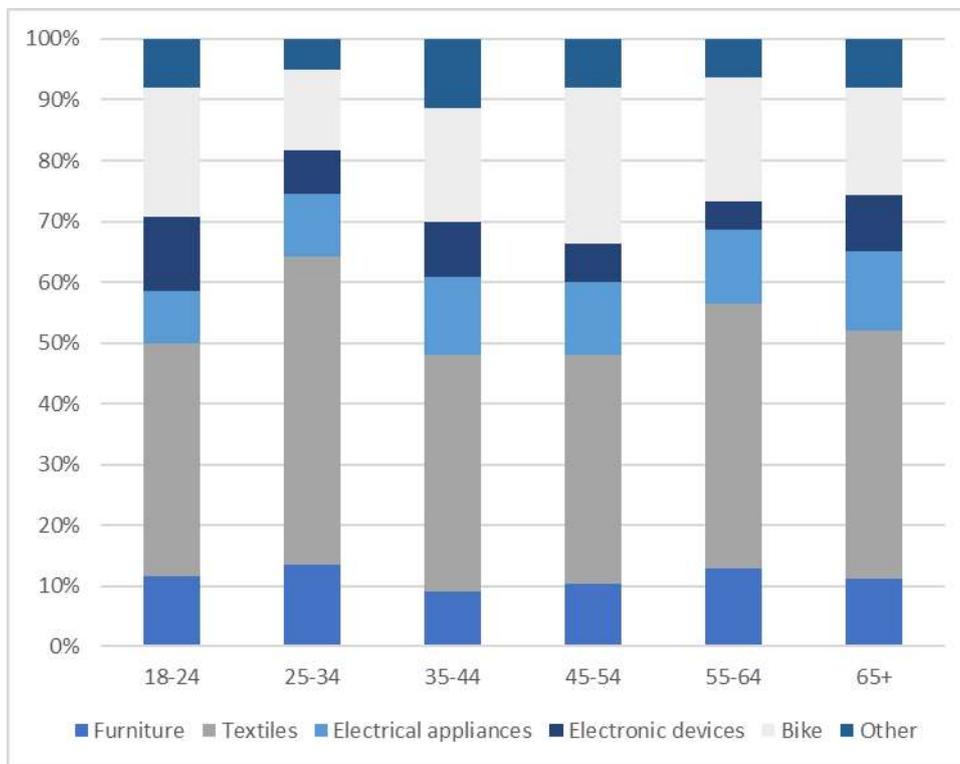
Figure 4.8: Percentage of goods repaired by each age category by type of good

4.1.3   Education

Overall, the more education people have had, the higher the likelihood is that they had something repaired (whether they did this themselves or outsourced it). As illustrated in the figure below, just over half of those with lower secondary school education as their highest educational attainment did not have anything successfully repaired in the 12 months prior to the survey. This figure noticeably becomes smaller as the educational attainment rises. The proportions of those repairing/not repairing seen amongst the lower educational attainment groups reverses amongst those who have a higher educational level. Amongst those higher educated groups (i.e., with post-secondary education) it is almost two-thirds who had a repair done.

Turning to whether those repairs were mostly done by self-repairers or outsourced an interesting pattern emerges. The proportion of 'self-repairers' within each educational level do not significantly differ from one another. Self-repair is not characterised by educational level.

On the other hand, the increase in the proportion of repairs amongst those who have attained a higher education level is due to the higher incidence of outsourcing their repairs. Around half of degree (and above) educated adults have outsourced a repair which is significantly more common compared to those with educational levels below this.
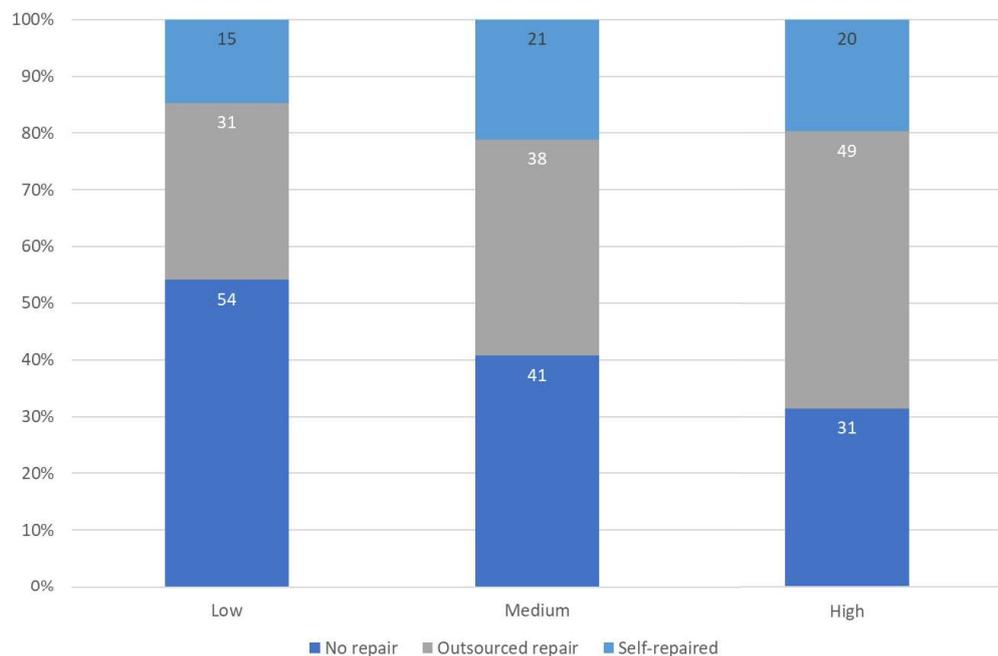
Figure 4.9: Repair profiles of different educational levels

There is no consistent pattern in the channel chosen for repair across categories of goods when it comes to self-repair. There are some differences, as shown in the figure below, but there is no dominant strategy to say that people with a certain educational attainment level tend more towards formal or informal outsourcing repair strategies.

Self-repair is highest amongst the middle educated when it comes to the repair of furniture. The middle educated are also more likely than the higher educated to have self-repaired a bike. Both the lowest and middle educated are more likely to self-repair their electrical appliances than the higher educated. When it comes to outsourcing strategies, there is little difference between educational attainment and the use of formal repair channels. Those with a higher education were more likely to have used a formal channel to repair their electronic devices whilst those with the lowest educational attainment were most likely to have used formal channels for the repair of bikes.
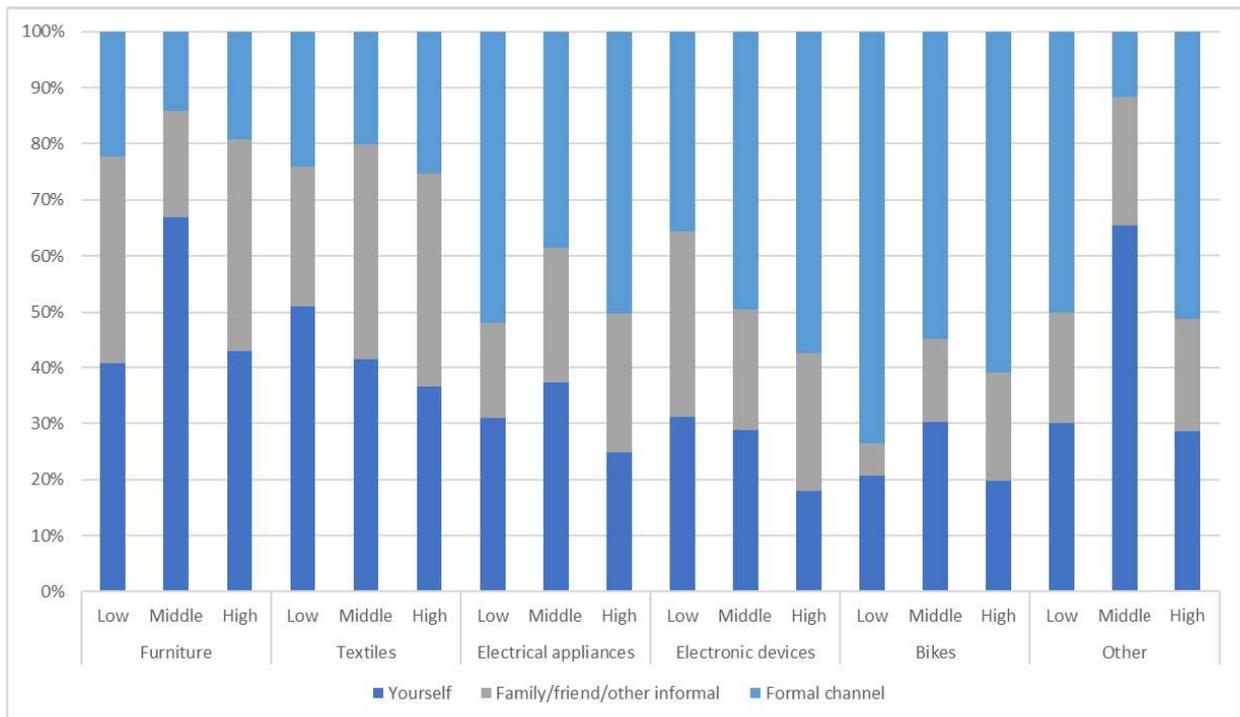
Figure 4.10: Educational attainment differences in the self-repair and outsourcing to informal or formal repair (proportion of goods)

4.1.4 Income

Respondents were asked to indicate how well their household was able to make ends meet given their income. As the question that was included is comparable to one of the questions of the EU quarterly data collection on living conditions (EU-SILC), it is possible to compare our sample who had something repaired in the past 12 months with the situation in general in Flanders. As illustrated in the figure below there is little difference in the ability of the sample of repairers to make ends meet compared to the general population (as measured by EU-SILC). We can conclude from this that, while we did not control for this parameter, our sample is representative for the Flemish population in terms of income, on top of the parameters for which we controlled (age, education level, province). Furthermore, the ability to make ends meet easily or with difficulty was not significantly different between those who were outsourcing or self-repairing. This contrasts with the above findings related to education where differences were evident. The results are suggesting that it is not specifically a clear economic decision to repair or not and whether that repair is outsourced or done by the person themselves. Furthermore, the education results find it is not related to self-repair and is only related to outsourcing.
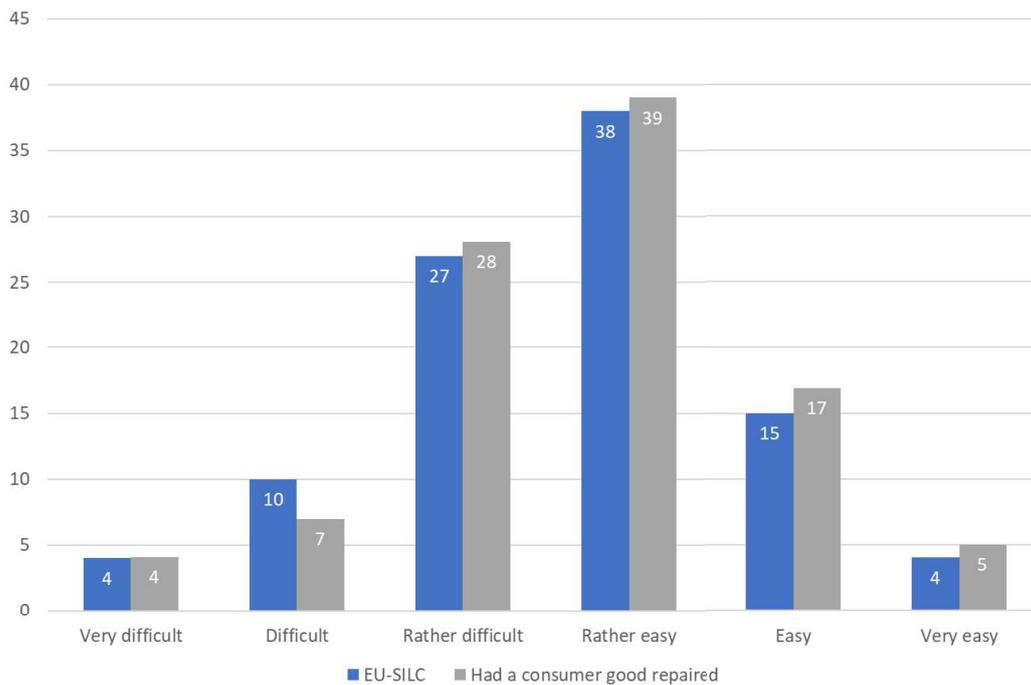
Figure 4.11: Being able to make ends meet in the general population compared to those who had a consumer good repaired in the 12 months prior to the survey

4.2 Attitudinal and behavioural characteristics

To get a better picture of attitudinal and behavioural characteristics of repairers, we included several questions probing these.

For attitudinal characteristics a question from the OECD EPIC survey was taken, to ensure comparability with a sample of the general population and not only to report these results amongst the sample of those who had something repaired. This question includes a range of societal issues and asks people to rate how important they are for them. On average, the general population in Belgium rate climate change as being very important more than (Flemish) people who have had anything repaired. Therefore, we cannot conclude that repairers, whether these are outsourcers or tend towards self-repair, prioritise environmental importance which could be linked to their repair decisions.

Those who had something repaired were also on average less worried about economic and political issues compared to the general population. With regards to personal safety, the sample of those who had something repaired is fairly similar to the general population with similar proportions rating this as being very important. However, as the

EPIC survey and our survey were not administered at the same moment, this is possibly influenced by the timing of the questionnaire. The EPIC survey was administered between June and July 2022 when climate concerns may have been higher than during the period of this survey in Autumn 2023.
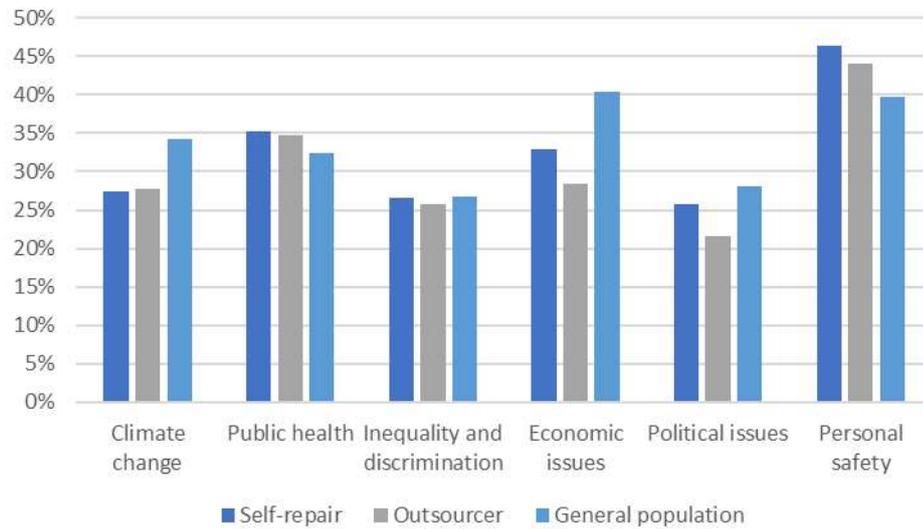
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Figure 4.12: Percentage of respondents rating various issues as 'very important' about societal topics

Going beyond how important people consider various societal topics this survey explored behaviours of those who have had a repair carried out. To measure these environmental behaviours, we asked questions which were comparable to the 2021 Belgian National climate survey[51] carried out by the federal public service Health and environment. It asks about a range of environmental behaviours and identifies whether respondents are doing these, are not doing these but are planning to do them in the future or are not doing these.

Comparing the survey sample of those who had something repaired to the results amongst the general population gives some interesting results. First, unsurprisingly, larger proportions of our survey sample of 'repairers' compared to the average citizen state that they repair broken devices as much as possible – 81% compared to 58% in the general population.

On the whole, from the twelve statements the sample of our survey diverges in engaging in three of these behaviours to a greater extent than the general population. On balance our sample of repairers seem to engage in most behaviours to the same extent as the general population.

Other than repair there are two other environmentally friendly behaviours that people who have their goods repaired are engaged with to a greater extent than the general

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51 Klimact (2022) Klimaatenquête 5de editie klimaatenquete-2021

population. Those who have their goods repaired also appear to engage in the other higher R strategy asked about. 59% of this sub-population buys second-hand products compared to 47% of the general population. They are also more likely to state that they use rainwater regularly in their household with just over half (52%) doing so compared to 40% of the general population.

Some differences in behaviour are even more pronounced when you consider 'self-repairers'. A greater proportion engages in the climate behaviours mentioned above (i.e., buying second-hand and using rainwater regularly in the household). Furthermore 93% use hot water carefully compared to 79% of the general population. At the same time, those who self-repair are less likely to limit their meat consumption (41% compared to 51% of the general population) or buy organic products (32% compared to 41% of the general population).

Therefore, there is some evidence that self-repairers may be somewhat more engaged in climate friendly behaviours compared to the general population, but this relates to only a limited set of behaviours rather than constituting a particular lifestyle of many behaviours. Together with the findings that those who engage in either outsourcing or self-repair behaviours do not rate climate as being as important in comparison to the general population suggests that 'repairers' could not be characterised as being a population of climate concerned citizens.
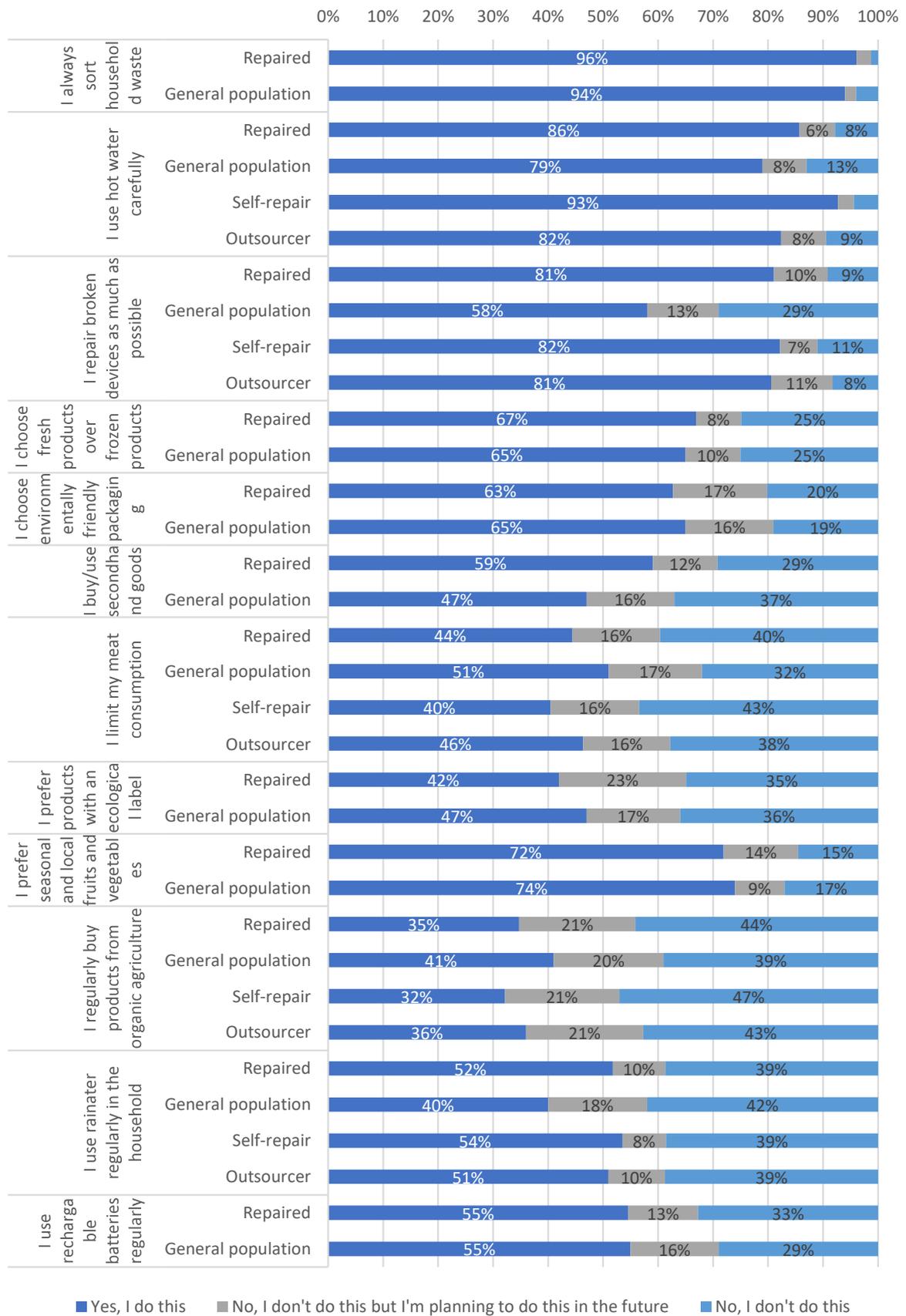
Figure 4.13: Percentage of respondents indicating they are or are planning to implement ecological behaviours.

To explore the idea of a 'repair culture' we devised a series of questions that respondents had to indicate their agreement with. Interestingly agreement was strongest when it comes to the statement that 'repair skills are valued by the people around me' with 71% in agreement with this statement with no significant differences between self-repairers and outsourcers in relation to this. Only 5% disagreed. More than half (56%) of those who had a least one item repaired were also in agreement with the idea of a throw-away culture (it is common for people around me to buy new things instead of repairing them) whilst only 18% disagreed that this is the case. Almost half (44%) openly promote and share their repair activities. A similar proportion (41%) agree that people in their social circle view repairing items as complicated and difficult. People were equally divided when it comes to whether 'many people around me engage in repairing items when they break of malfunction' with 34% in agreement, 28% neutral and 31% in disagreement.

There were notable differences between self-repairers and those who are outsourcers of repair when it comes to two of these statements. Self-repairers more commonly held views that there is a throw-away culture and repair is viewed as being difficult compared to those who tend towards outsourcing their repair. 61% of self-repairers agree with the statement that it is common for people to buy instead of repair compared to 54% of outsourcers. Almost half (48%) of self-repairers agree that their social circle views repair as difficult and complicated compared to 38% of those who outsource.

		Totally agree	Agree	Neutral	Disagree	Totally disagree	Don't know
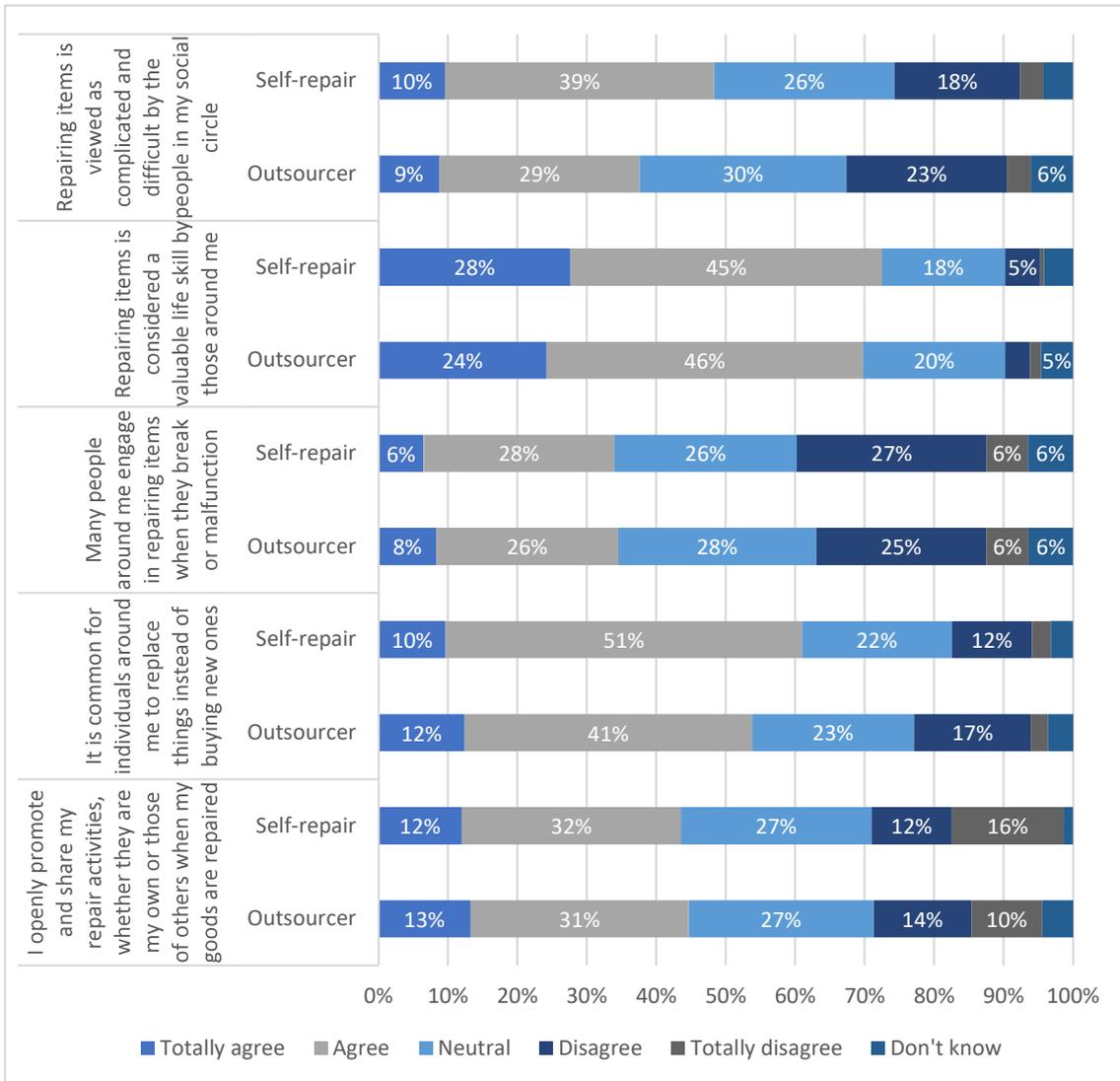
Figure 4.14   Responses to the question on social behaviour

4.3   Acquiring repair skills

When people indicated they had repaired something themselves, we asked to indicate up to two sources where they attained the necessary skills to repair items. We identified six sources for people to have obtained their skill from: family, friends, initial education, (evening) lessons or courses, work, and self-taught (e.g., through online manuals or videos). A category 'other' was also included where respondents could fill out where they attained the skill.
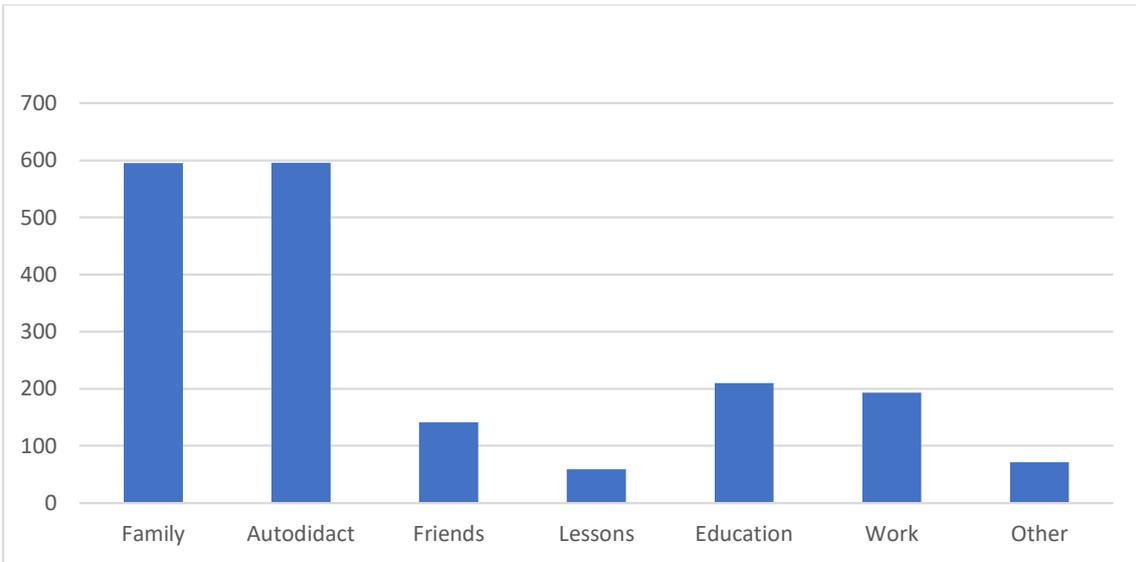
Figure 4.15: Number of times respondents indicated different sources of skill.

Across all the categories, self-taught and through family where the most important sources of skills. The next source of skills is initial education, being identified as a source of repair skills, followed by work as a source of repair skill. Lessons (beyond initial education) are the least important source of skill. Overall, the majority of channels through which repair skills are acquired seem to be situated in informal settings, with skills obtained through family or self-taught skills to be most prevalent.
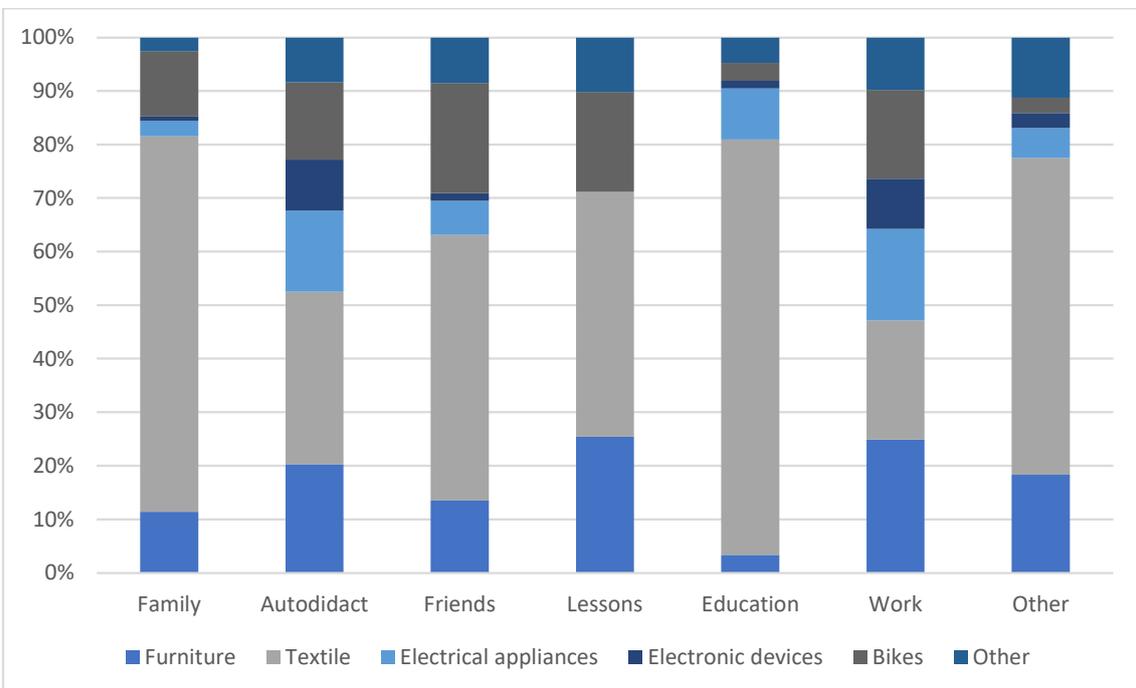
Figure 4.16: Source of skill by category of good repaired

When looking into the different categories of goods and where the skills are attained, some other dynamics emerge. While family is overall an important source of skill, this is not the case when repairing appliances and digital devices. Instead, most of these skills seem to be sourced through self-teaching. When not being self-taught, the other source of skills that is more important than other channels is having learnt these at work. Nearly a quarter (23%) of those who repaired electrical appliances ranked this as an important source of their skills. For textiles however, learning through family accounts for almost 44% of skill attainment.

Interestingly, informal channels of skill attainment are similarly important over all the different categories of goods: skill acquired through family, friends or self-taught account for between 67 and 78% of skills channels (except for the 'other' category of goods'). And while work is the most important formal channel for all the categories of goods, this does not apply to textiles, for which the skills have been mainly attained through initial education. In fact, the role of initial education is only seen as important when it comes to textiles in comparison to other consumer goods. 22% of those who repaired their textiles mentioned initial education as an important source.

5 | Conclusions and recommendations

The role of repair in the circular economy is significant, as evidenced by the data presented here from a survey of the Flemish adult population. Firstly, repairing products extends their lifespan, contributing to lower waste production and reduced resource usage. 60% of the Flemish adult population has repaired at least one consumer good in the 12 months prior to the survey. The incidence of repair is encouraging although there is still some distance to go given that 40% have not had anything repaired in the time span of a year. Measuring these repair activities results in a calculation of 19kg per Flemish adult each year that is repaired and thus waste that is avoided, a metric that was previously unmeasured.

There is little evidence that people engage a variety of strategies when it comes to combining self-repair with outsourcing. Rather, people are clearly very divided into self-repairers who repair most of their goods themselves (19%), outsourcers who had repairs done by informal or formal channels and almost never repaired anything themselves (41%). Nevertheless, there were gendered and generational patterns observed. Young people engaged in repair behaviours to a much larger extent compared to older generations, and this is due to outsourcing strategies amongst the youngest generation rather than a greater degree of self-repair. This could lead to the loss of repair skills amongst younger generations given their tendency towards outsourcing to informal channels (i.e., to other members of their family). At the same time this may also result in future growth of the formal repair sector in the absence of informal repair skills. Whilst both genders relied a lot on self-repair, men were more self-reliant than women. The exception is when it comes to textiles, which is significant given that this study finds that the 'repair economy' is primarily one of repairing textiles. Textiles represent almost half of all repairs carried out in the 12 months prior to the survey.

Product lifetime lies at the centre of circular reuse. Young textiles play a major role in the volume of repair in Flanders. A quarter of all goods repaired were textiles that were two years old or less. Most of these textiles (22% of all goods) were thought by respondents not to be under warranty at the time of the repair. Future research should explore specifically elements such as consumer rights to a repair and EPR in relation to textiles. However, an indicator based primarily on the weight of such goods finds a much smaller role for textiles in comparison to the volume of waste avoided in the case of repairing electrical appliances and furniture.

There is substantial value associated with informal repair which is not currently accounted for when measuring the circular economy. People put less value in terms of expenditure on informal compared to formal repair, most likely to not accounting for their own time or that of the informal channels they use. If we assign the same value to informal repair as formal repair, then the repair economy is worth € 582 million which

is more than double the reported expenditure from this survey. The time investment is also substantial and equates to the 1.5 times the size of the workforce that is present in the formal economy of repair. Informal repair activities constitute significant value to the Flemish repair economy.

The acquisition of repair skills is a vital element of promoting a repair culture and, by extension, a circular economy. This study reveals that both intergenerational skill flows and self-learning play significant roles in acquiring these skills. Individuals who take initiatives to learn repair skills on their own contribute significantly to the repair economy. Promoting resources for self-learning, such as online tutorials or DIY manuals can empower individuals to engage in repair activities. At the same time, the transfer of skills within families or communities is a valuable resource for skill acquisition. Encouraging the flow of knowledge can help preserve and disseminate repair skills. The study finds that formal initial education plays a significant role in the repair of textiles. Integrating practical repair skills into the formal initial education system is beneficial to sustain the informal repair economy. In the cases of electrical and electronic equipment (EEE), work is a common source of repair skills, indicating the value of on-the-job training.

Based on the conclusions drawn from this survey of the Flemish adult population the following recommendations can be made to promote a repair culture to advance the goals of the circular economy:

1. **Promote a repair culture:** Given that 40% of the population did not have anything successfully repaired in the past year there is potential growth in this area. Support and resources could also be provided to both self-repairers and outsourcers to promote a repair culture that includes both strategies.
2. **Focus on textiles:** Given the significant role of textiles in the repair economy special attention could be given to this area, especially from a consumer rights perspective. BEUC[52] has previously argued that a longer lifespan of clothes could be supported through measures reinforcing the use of legal guarantees of non-conformity in cases of defects of garments and textiles. Their argument is that if more people exercise those rights, companies will find it less profitable to sell low quality clothes (that need to be either disposed of or repaired). Strategies should look for a way to stop the ongoing loss of the quality of textiles as this reduces the possibility of repairability. Alongside such strategies it is important to continue initiatives to promote the repair of textiles, ensuring core repair skills are integrated into initial education programmes which transcend gender stereotypes.
3. **Value Informal Repair:** Recognise the value of informal repair activities in economic calculations to highlight the true contribution of the informal repair economy. The time investment in informal repair equates to the same size workforce that is present in the formal economy of repair. Recognising this could lead to economic opportunities, including the use of mixed models of

52 https://www.beuc.eu/sites/default/files/publications/BEUC-X-2023-099_Fashion_makeover_making_sustainable_textiles_fit_consumers.pdf

formal and informal repair. Measuring the value of informal repair can also direct resources towards promoting informal repair activities and developing supportive infrastructure.

4. **Encourage skill acquisition:** Informal repair activities often involve the acquisition of repair skills, either through self-learning or intergenerational skill flows. Recognising these activities can help to promote this skills development and preserve traditional repair skills. Leverage the tendency of young people to engage in repair behaviours. Awareness and programmes could be developed that appeal to this demographic and encourage the insourcing of their own repair skills and encourage the continuation of these behaviours as they age- to mitigate any current skill loss amongst this generation.

5. **Address gendered patterns observed in repair activities.** For example, initiatives that encourage women to engage in self-repair beyond textiles and vice versa amongst men. Repair skills training should ensure it overcomes stereotypes given that the results suggest once skills are acquired people use them. Encourage families and communities to share repair skills across generations. This could be facilitated through community initiatives within the context of repair cafes.

6. **Combat the 'throwaway culture'.** As recognised by respondents and prior research, consumers are more likely to dispose of goods than repair them due to their low cost. Research has already shown us that the perceived value of a good influences behaviour with goods perceived as cheap less likely to be repaired and more likely to lead to waste. As referred to in the introduction of this report individuals weigh up the perceived cost and benefit of repair. Cheaper consumer goods can discourage repair given the perceived higher costs of repair compared to replacement. As this survey shows, when the decision was made to repair the item, in most cases this prevented the item from being replaced and becoming waste. This requires a combination of the above measures such as the promotion of a repair culture, programmes that could not only give people skills to repair but could also raise awareness of the impact of disposing of their goods instead of repair together with regulatory measures such as eco-design legislation and product passports.

In conclusion, the role of repair in the circular economy is crucial. By understanding consumer behaviour and the economic impact of repair, strategies can be developed to promote a more sustainable and circular economy.

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