PUTTING CIRCULAR CONSUMER GOODS TO WORK

The employment potential of circular scenarios for Dutch consumer goods: lessons from the clothing value chain

CIRCLE ECONOMY

GOLDSCHMEDING FOUNDATION
MENS • WERK • ECONOMIE

CONTENTS

NEW PERSPECTIVES FOR CONSUMER GOODS

The Netherlands aims to be fully circular by 2050 and halve its use of primary raw materials by 2030. Since 2016, the nation has been setting out plans to achieve these ambitious goals. The 2020 *Circularity Gap Report Netherlands* found that the nation is already 24.5% circular—higher than many of its European counterparts. However, the report also underlines the need to transform prominent sectors of the Dutch economy if it is to reach its 2050 goal of a fully circular economy.

The Dutch government convened private stakeholders, civil society and academic institutions, creating a roadmap to realise its circular ambitions. Five transition agendas were identified and specific actions were appointed to key industry sectors and value chains. The transition agenda for consumer goods outlines the road to circularity for electronics, furniture, textiles and plastic packaging. Together, it is expected to contribute substantially to the government's overall circular goal.[1]

The report *Putting circular textiles to work*, published by Circle Economy with support from the Goldschmeding Foundation, explores the employment potential of circular clothing in the Netherlands. Based on a quantitative and qualitative analysis of circular clothing in the Netherlands by Circle Economy and HIVA, the main findings present food for thought for how other industries could contribute to the 2050 goal whilst maximising opportunities for job and skills development.

This briefing builds on the findings of *Putting circular textiles to work* and its analysis of the Dutch clothing value chain to identify lessons for other consumer goods. Textiles have a mid-length to long life cycle and so this briefing focuses on drawing our lessons for consumer goods with similar life cycles: electronics and furniture. In the following sections, both these industry sectors are briefly introduced, followed by a deep dive into the employment potential of circular scenarios and associated shifts in skills needs in the Netherlands. The employment potential and skills needs for electronics and furniture are compared to the findings from *Putting circular textiles to work* for the clothing value chain. At the end of this briefing, the common challenges faced by consumer goods industries in their adoption of circular strategies are outlined.

KEY DATA & FIGURES

ELECTRONICS

LANDSCAPE

Annual Turnover:
€31,228 MILLION—10% of the country's total manufacturing industry.[2]

Employment:
48,000 FTEs (full-time equivalent) in 2019.[3]

Waste Generated:
Dutch citizens dispose of **19 KILOGRAMS** worth of electronics per year; 50% of which are collected separately.[4]

EMPLOYMENT POTENTIAL OF CIRCULAR SCENARIOS

- Product-as-a-service models could impact job growth by an estimated **20%** in the retail and service industries.[5]
- Additionally, e-waste management currently accounting for **700 FTEs**—needs to be expanded. This involves activities related to collection, disassembly and recycling.[6]

SKILLS NEEDED

Repair, remanufacturing and recycling: Increased number of skilled workers in electrotechnical engineering, process operations and machine mechanics, among others.[7]

Product-as-a-service business models: Skills related to service design, process management and optimisation, and customer relations.[8]

Digital (IT) services: Specialised IT workers for development, implementation and improvement.[9]

FURNITURE

LANDSCAPE

Annual Turnover:
€3,933 MILLION—minor share of turnover for the country's total manufacturing industry.[10]

Employment:
110,000 FTEs in 2019.[11]

Waste Generated:
1.5 MILLION mattresses, on average, are discarded each year in the Netherlands.[12]

EMPLOYMENT POTENTIAL OF CIRCULAR SCENARIOS

- **160,000 JOBS** related to recycling activities could be created in the European furniture industry through circular strategies.[13]
- Remanufacturing is an option that needs to be further developed as it only represents **0.1%** of the European furniture manufacturing industry.[14]

SKILLS NEEDED[15]

Knowledge on sustainable and recovered materials: Sourcing the right materials and the right suppliers for ecological products, and skills working with and revitalising reclaimed materials.

R&D: Eco-design skills and research and innovation along untapped material use.

Customer and partnership needs: Understanding of customer and partner needs, and an ability to translate these into customised products, as well as suppliers, customer and community engagement.

TEXTILES AND CLOTHING (T&C)[16]

LANDSCAPE

Annual Turnover:
€29,322 MILLION

Employment:
127,024 FTEs in 2019

Waste Generated:
Dutch citizens dispose of **17.7 KILOGRAMS** worth of textiles and clothing per year; 44.6% of which are collected separately.[17]

EMPLOYMENT POTENTIAL OF CIRCULAR SCENARIOS

- Reuse and resale strategies could spur job growth of **25%**, compared to a business as usual (BAU) scenario in 2050, equal to 162,705 FTEs across the T&C value chain.
- A change in consumption patterns could increase employment by **20%** (156,164 FTEs) in comparison to BAU, while a future value chain based on recycling performs **14%** better (148,329 FTEs) than BAU in terms of employment.

SKILLS NEEDED

Repair, maintenance and remanufacturing: Strategic planning, knowledge of fabric properties and quality assessments for roles such as remanufacturing designers or clothing quality assessment workers.

Innovation, business development and IT: Marketing, data analysis, automation and technology integration in logistics processes.

Knowledge on sustainable and recovered materials: Knowledge of different material compositions, sustainability and circularity concepts.

Communication and soft skills: Good people management and listening skills, especially related to working closely with people distant to the labour market.

ELECTRONICS

The employment potential of circular scenarios

The European Commission identified electronics as a key sector in the new Circular Economy Action Plan. Here it announced a circular electronics initiative promoting longer product lifetimes and including regulatory measures under the Ecodesign Directive, including the implementation of 'right to repair' legislation; the introduction of a common charger; the improvement of the collection and treatment of e-waste and a review of European rules on restrictions of hazardous substances in electronics.[18]

According to the Dutch Consumers Association, electronics have an average lifetime of three to ten years, depending on the product category.[19] However, the European Environment Agency estimates that the average actual lifetime of these products is at least 2.3 years shorter than the designed or desired lifetime.[20] Design for durability is clearly a scenario that optimises the lifetime of electronics—and spurs a multitude of employment opportunities. Circular business models, such as Product-as-a-Service, where the ownership of consumer electronics stays with the producer and not the consumer, are considered meaningful opportunities in the *Dutch Transition Agenda for Consumer Goods*. A shift to such models could have a significant impact on the number of jobs in the sector, estimating growth of 20% in the retail and service industries.[21] Circular scenarios will also influence the skills needed, as described in the following section.

Dutch consumers dispose of 19 kilograms worth of electronics per year; 50% of these are collected separately, while the rest is lost within residual waste.[22] Discarded electronics contain high value resources that can be recovered like gold, silver and platinum. WeCycle, a major association in the Netherlands collecting large volumes of e-waste reports that 95% of materials collected find a meaningful destination, 80% of materials collected can be reused or recycled. This initiative reports that the handling and processing of e-waste generates 700 full time equivalent (FTE) jobs, 27% of which are classified as ‘social return’ jobs for vulnerable workers. The disassembly of electronics accounts for 50% of these social return jobs.[23] A further increase in the share of electronics collected separately will allow for more jobs in e-waste collection, disassembly and recycling.

A skills gap in the electronics labour market

There has long been a shortage of workers with technical skills in the Dutch labour market. Despite national and local initiatives that aim to incentivise students to enter technical education and professions, and business initiatives such as those powered by Fairphone[24] and Closing the Loop[25] (which establish innovative business models that rely on skills for collection, reuse, and lifetime extension for electronic components), all sectors that require technical skills face labour shortages. The 2019 Factsheet issued by *Uitvoeringsinstituut WerknemersVerzekeringen* (UWV, Dutch Employment Insurance Agency)—about the industry identified major barriers to attracting skilled workers to technical professions, from electrotechnical engineers and process operators to machine mechanics.[26]

Electronics repair, remanufacturing and recycling require technical skills that are not widely available in the labour market. A circular scenario that relies on electronics repair and remanufacturing would further add to this existing gap between demand for and availability of skilled workers. This highlights the need for skills development initiatives targeted at the industry, where relevant coordination with the Transition Agenda for the manufacturing industry is therefore being developed by the transition teams. The complexity of product design and maintenance presents a substantial difference with the clothing value chain, where we assume that future circularity relies on reskilling the current occupations, such as tailors and assemblers.

Product-as-a-Service business models shift the focus from selling goods to providing services. As a consequence, new skills are needed to ensure consumer needs are met and products are used in an efficient manner. Skills that will become increasingly important relate to service design, process management and optimisation, as well as customer relations.

Meanwhile, an increasing share of consumer electronics are connected via the internet to exchange real time data to inform the user and/or supplier on its performance. The so-called 'Internet of Things' enables suppliers to offer additional services to their customers, such as the automated supply of accessories (printer cartridges or coffee pods, for example). These services require specialised IT workers for development, implementation and improvement. According to the UWV, these profiles are already in high demand and vacancies for software developers are extremely hard to fill. This is a widespread challenge, as the majority of workers in IT (63% in 2020) work outside of the traditional ICT-industry, mainly in sectors such as business and financial services, public administration, industry, trade and healthcare.[27]

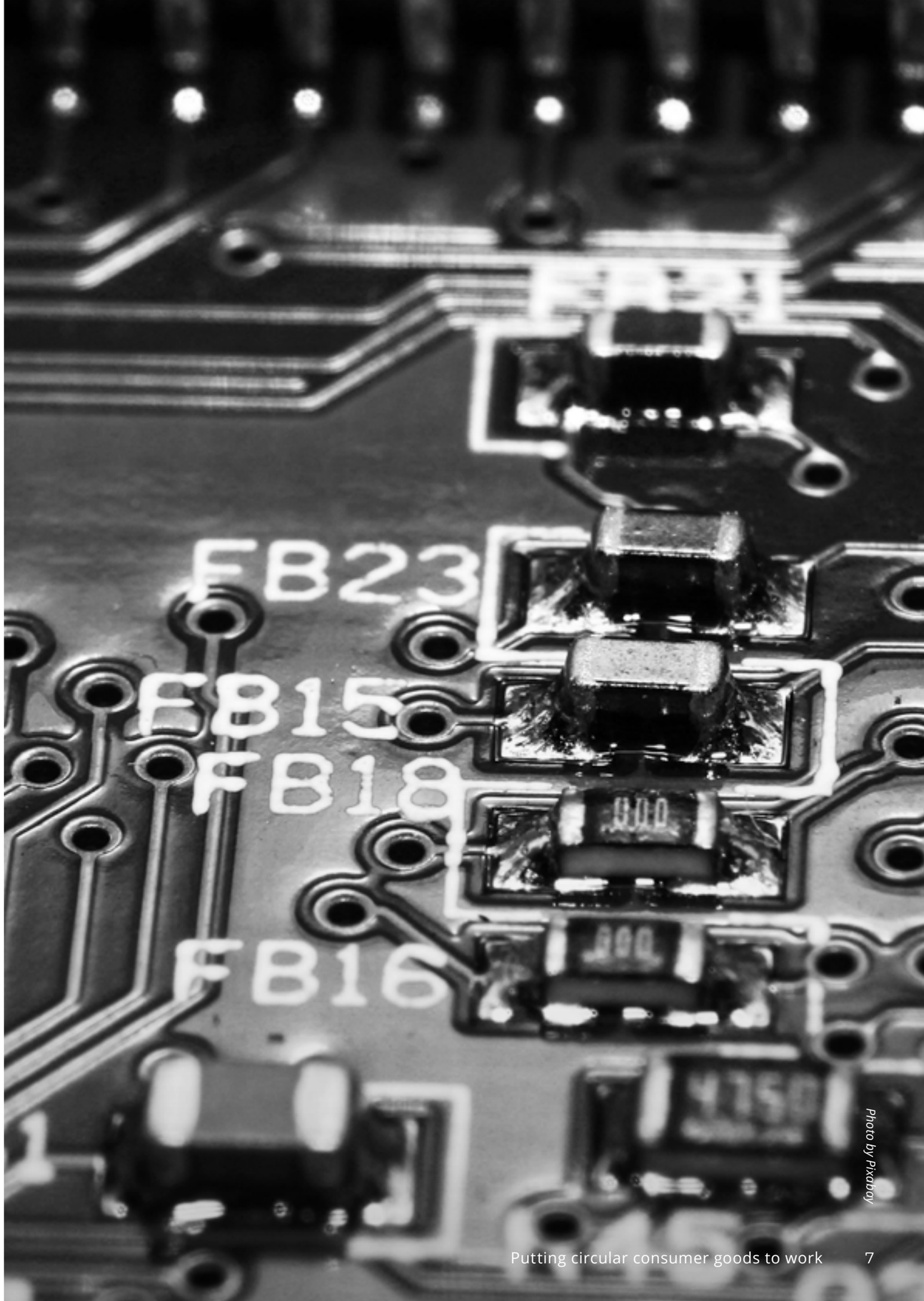

Photo by Pixabay

FURNITURE

Employment potential of circular scenarios

Furniture can often be resold after its first user has discarded it. The informal consumer-to-consumer trade of furniture is significant, as represented by popular trading platforms such as Marktplaats. An alternative to consumer-to-consumer resale is to offer used furniture to second-hand stores. According to the Dutch federation of second-hand stores (BKN), 14% of inputs received consisted of furniture.

Remanufacturing represents a minor share of the European furniture manufacturing industry: 0.1%. In Europe, only 3,400 workers are active in furniture remanufacturing.[28] As remanufacturing is not a specific focus of the European nor Dutch governments, no big changes are expected in relation to jobs in remanufacturing of furniture.

The *Dutch Transition Agenda for Consumer Goods* has identified targets specifically for wooden and hardboard, materials furniture mostly consists of.[29] By 2030, 50% of these materials already on the market should be diverted from incineration and be reused or recycled instead. Additionally, by 2030, 50% of the wooden and hardboard materials entering the Dutch market should be circular, meaning they are designed for reuse and/or manufactured with biobased materials. To realise these ambitions, take-back and recycling activities need to be scaled up considerably, creating jobs in logistics, recycling centers and the development and production of biobased alternatives. A previous study estimates 160,000 jobs could be created in the European furniture industry through circular strategies.[30]

A skills gap in the furniture labour market

In line with the findings for the clothing value chain in *Putting textiles to work*, the furniture industry faces an ageing workforce and difficulties in recruiting skilled younger workers[31] to safeguard the continuity of the craftsmanship that contributes to the high-end positioning of its products.

A study funded by the European Erasmus+ programme identified the following key skills for a circular furniture industry in Europe:[32]

- Knowledge and skills in sourcing the right materials and the right suppliers for ecological products;
- Working with reclaimed materials in order to bring them back into their initial conditions in order to avoid wood and mdf going directly into incineration. 'Circulair Ambachtscentra' could provide a workplace in different municipalities across the Netherlands to develop these skills further and scale the cycling of used furniture;[33]
- Eco-design skills and research and innovation in line with untapped material use;
- Understanding of customer needs, and an ability to translate these into customised products;
- Entrepreneurial and community engagement skills to develop strong relations between partners, suppliers and customers.

Considering the very modest size of the existing remanufacturing and recycling industry for furniture, these skills are not yet prevalent amongst skilled workers in the industry. The furniture industry in both the Netherlands and Europe is facing a considerable educational challenge to upskill its workforce accordingly.

To safeguard the competitiveness of the European furniture industry within a global market with a vast amount of manufacturers located in countries with low wages, labour costs are often reduced where possible. One solution considered by governments and industry is investment in the digitalisation and optimisation of activities. The Erasmus+ programme has funded the development of several educational programmes, to ensure workers have the right skills to support the digital and circular transition for the furniture industry. This includes digital skills development to foster the employability of low-skilled adults in the sector, as well as to support digital skills training in vocational education.[34] The European Furniture Manufacturers Federation also carries out Erasmus+ projects to develop curricula on the implementation of Integrated Management Systems and the training of Digital Transformation Managers.[35]

INCLUSION OF PEOPLE WITH A DISTANCE TO THE LABOUR MARKET: RISKS AND OPPORTUNITIES

ELECTRONICS

Circular electronics also offer valuable opportunities for vulnerable workers to reintegrate into the labour market due to the success of a number of organisations that employ people with prolonged periods of unemployment. As discarded electronics and their components have a market value after repair or disassembly, it is financially viable to set up scalable and inclusive business models. This financial viability is substantially more present in these types of goods, than in currently consumer goods that have a lower market-value after use, such as textiles. The manual work required for disassembly, sorting and recycling operations may hence generate decent job opportunities for people with a distance to the labour market,[36] given all health and safety regulations in the workplace are upheld.

There are already several examples of programmes in the Netherlands that provide people with a distance to the labour market with support, allowing them to gain experience in work rhythms and socially and environmentally friendly business ethos and are taught relevant new skills. For example, Road2Work focuses on the disassembly of electronics. Out of the 60 vulnerable workers who have joined the programme, 50% per year did not return to Active Labour Market Policies—government programmes that intervene in the labour market to help the unemployed find work—and 35% were able to find a paid job in the labour market after following the programme.[37]

These initiatives identified activities suitable for people with low-level qualifications. However, due to automation and digitisation the total number of positions in assembly is expected to decline towards 2030. The share of low- and medium-level qualified assemblers is expected to decline slightly while the share of high-qualified assemblers is likely to rise from 8% currently to about 14%. This could imply that positions for low- and medium-level qualified assemblers will become more scarce in the future.[38]

FURNITURE

Vulnerable workers are employed in the circular furniture supply chain in municipal recycling centres as well as in many of the second-hand stores, similar to what can be found in the clothing value chain. The inclusion of vulnerable workers in other parts of the value chain is limited due to the level of craftsmanship required in furniture (re) manufacturing and assembly.

Workers in the garment and furniture (wood) industries present a mean probability of their roles becoming automated of 56%. That probability could be higher depending on sociodemographics, such as gender, age and education level. In general, the risk of job displacement by automation is higher for men and low-skilled workers.[39] This could make it even more difficult for people with a distance to the labour market to have an opportunity for work in industries that traditionally have received low-skilled workers.

Photo by Hans Reniers

CONCLUSIONS AND RECOMMENDATIONS

The research conducted by Circle Economy and HIVA illustrates how gaps in the labour market will need to be addressed to ensure the right workforce is available to turn circular ambitions for the clothing value chain into reality.

However, the clothing industry is not the only consumer goods industry facing such challenges. Both furniture and electronics are already facing a shortage of skilled workers for different reasons. The furniture industry has an ageing workforce and is struggling to recruit skilled younger workers to maintain the level of craftsmanship that has positioned Dutch furniture manufacturers at the high-end side of the segment.

Meanwhile, the electronics industry struggles to recruit skilled workers with technical know-how, a challenge the industry shares with all technology-heavy activities in the Netherlands. The transition to circular economy practices will likely widen the existing skills gap between availability of and demand for skilled workers in both consumer goods industries. This trend would be even more crucial in countries with ambitions to scale up business models that prioritise repair and product lifetime extension.

At Circle Economy, we propose a set of recommendations to help the workforce to tackle the challenges a circular transition could bring:

1. To meet the skills needed across industries, an interdisciplinary and multidisciplinary approach is needed. Workers need to have a depth of specialist skills in their primary field and transversal skills that could be useful to collaborate across disciplines. The T-Shaped skills approach provides a helpful framework for understanding how specialist and generalist transversal skills can be combined in an increasingly interdisciplinary labour market.[40] For an in-depth explanation of how to apply this framework consult our recent publication, *Closing the skills gaps: vocational education and training for the circular economy*.[41]
2. To build a workforce that is transferable between industries the implementation of re- and upskilling programmes for workers is essential, offering opportunities for lifelong learning and employment. This is particularly relevant for workers at risk of being displaced by automation processes, mostly people with low qualifications.
3. Consumer goods industries must investigate how to cycle disposable material in order to diminish the amount of waste incinerated. At the same time, the development of alternative materials should be prioritised: modular components in the case of furniture, for example, that could be easily recovered for remanufacturing of new products.
4. Higher-value consumer goods, such as electronics, offer an interesting opportunity to transform the waste management sector. This could imply more job positions for workers distant to the labour market in collection, sorting and disassembly roles that do not require high qualifications.

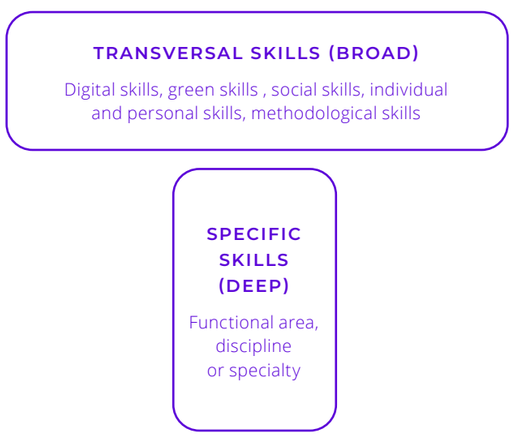

Figure: T-Shaped Skills Approach

Photo by Alejo Reinoso

REFERENCES

1. KPMG and Circle Economy. (2021). *Transitie is mensenwerk* (pp. 1-46, Rep.). Ministerie van Infrastructuur en Waterstaat. Retrieved from: Rijksoverheid
2. 2019 figures, CBS Open Data
3. 2019 figures, CBS Open Data
4. Milieu Centraal. (2021). Afval scheiden: cijfers en kilo's. Retrieved from: Milieu Centraal
5. KPMG and Circle Economy. (2021). *Transitie is mensenwerk* (pp. 1-46, Rep.). Ministerie van Infrastructuur en Waterstaat. Retrieved from: Rijksoverheid
6. WeCycle. (2020). Jaarverslag 2019. Retrieved from: WeCycle
7. UWV. (2019). *Industrie Factsheet arbeidsmarkt*. Retrieved from: UWV
8. UWV. (2019). *Industrie Factsheet arbeidsmarkt*. Retrieved from: UWV
9. Interview with UWV, 2021
10. 2019 figures, CBS Open Data
11. 2019 figures, CBS Open Data
12. RetourMatras. (2021). Over Retourmatras. Retrieved from: RetourMatras
13. European Environmental Bureau (EEB). (2017). *Circular economy opportunities in the furniture sector* (pp. 1-55, Rep.). Brussels, Belgium: EEB & Eunomia Research & Consulting Ltd. Retrieved from: EEB
14. Furn360. (2017). *Circular economy opportunities in the furniture industry: overview of current challenges and competences needs* (pp. 1-51, Rep.). Erasmus + Project of the European Union. Retrieved from: Furn360
15. Furn360. (2017). *Circular economy opportunities in the furniture industry: overview of current challenges and competences needs* (pp. 1-51, Rep.). Erasmus + Project of the European Union. Retrieved from: Furn360
16. Circle Economy. (2021). *Putting circular textiles to work: the employment potential of circular clothing in the Netherlands*. Amsterdam, Netherlands: Circle Economy. Retrieved from: Circle Economy
17. FFACT. (2020). *Massabalans textiel 2018. Onderzoek naar de massabalans van het in Nederland ingezamelde afgedankte textiel en de route en resultaten van de verwerking* (pp. 1-36, Rep.). The Hague, Netherlands: Ministerie van Infrastructuur en Waterstaat. Retrieved from: ffact.nl
18. European Parliament. (2021). *A European green deal: Legislative train for circular electronics initiative*. Retrieved from: European Parliament
19. Generali. (2017). *Hoeveel zijn jouw spullen waard?* Retrieved from: Consumentenbond
20. European Environment Agency (EEA). (2020). Electronics and obsolescence in a circular economy. Retrieved from: EEA
21. KPMG and Circle Economy. (2021). *Transitie is mensenwerk* (pp. 1-46, Rep.). Ministerie van Infrastructuur en Waterstaat. Retrieved from: Rijksoverheid
22. Milieu Centraal. (2021). Afval scheiden: cijfers en kilo's. Retrieved from: Milieu Centraal
23. WeCycle. (2020). Jaarverslag 2019. Retrieved from: WeCycle
24. CircularX. (n.d.). Fairphone—Modular, long-life smartphones. Retrieved from: circularx.eu
25. Closing the Loop, (n.d.). CTL story. Retrieved from: CTL website
26. Uitvoeringsinstituut Werknemersverzekeringen (UWV). (2019). *Industrie Factsheet arbeidsmarkt*. Retrieved from: UWV
27. UWV. (n.d.) ICT-beroepen. Retrieved from: werk.nl
28. Furn360. (2017). Circular economy opportunities in the furniture industry: overview of current challenges and competences needs (pp. 1-51, Rep.). Erasmus + Project of the European Union. Retrieved from: Furn36
29. Holland Circular Hotspot. (2018). *Transition agenda for consumer goods* (pp. 1-78, Rep.). Retrieved from: HCH
30. EEB. (2017). *Circular economy opportunities in the furniture sector* (pp. 1-55, Rep.). Brussels, Belgium: EEB & Eunomia Research & Consulting Ltd. Retrieved from: EEB
31. Scheffer, M. (2012). *In depth assessment of the situation of the T&C sector in the EU and prospects. Task 7: Synthesis report for the European textiles and clothing sector. Saxion Universities* (pp. 1-100, Rep.). Brussels, Belgium: European Commission. Retrieved from: European Commission website
32. Furn360. (2017). Circular economy opportunities in the furniture industry: overview of current challenges and competences needs (pp. 1-51, Rep.). Erasmus + Project of the European Union. Retrieved from: Furn36
33. Circulair Ambachtscentrum. (2021). About us. Retrieved from: Circulair Ambachtscentrum
34. EqWood. (n.d.) Digifind. Retrieved from: eqwood.org
35. DiTrama. (n.d.). Digital Transformation Manager. Retrieved from: ditrama.eu
36. Platform for Accelerating the Circular Economy (PACE) and World Economic Forum (WEF). (2019). *A new circular vision for electronics. Time for a global reboot* (pp. 1-24, Rep.). Geneva, Switzerland: WEF. Retrieved from: WEF
37. Road2Work. (2021). Retrieved from: Road2Work
38. Skills Panorama. (2020). Assemblers: skills opportunities and challenges. Retrieved from: Skills Panorama
39. Pouliakas, K. (2018). *Determinants of automation risk in the EU labour market: A skills needs approach* (pp. 1-30, Discussion Paper No. 11829). Bonn, Germany: Institute of Labour Economics. Retrieved from: IZA
40. Saviano, M. & Barile, S. (2013). Dynamic capabilities and T-shaped knowledge: A viable systems approach. In S. Barile (Ed.), *Contributions to theoretical and practical advances in management. A viable systems approach* (pp. 39-59). Aracne. Retrieved from: SSRN
41. Circle Economy. (2021). *Closing the skills gaps: vocational education and training for the circular economy* (pp. 1-30, Rep.). Amsterdam, Netherlands: Circle Economy. Retrieved from: Circle Economy

ACKNOWLEDGEMENTS

FUNDING PARTNER

Goldschmeding Foundation voor Mens,
Werk en Economie

AUTHORS

Hilde Van Duijn (Circle Economy)
Luis Sosa Lagunes (Circle Economy)
Natalia Papú Carrone (Circle Economy)
Jade Wilting (Circle Economy)

This briefing is part of the *Putting Circular Textiles to Work* project. Circle Economy would like to thank all contributors and interviewees for their time and highly relevant input. The full list of contributors can be found in our final report.

EDITORS

Laxmi Haigh (Circle Economy)
Ana Birliga Sutherland (Circle Economy)

DESIGN & LAYOUT

Nicolas Raspail (Circle Economy)
Inge ter Laak (Circle Economy)
Lauren Zemering (Circle Economy)

Cover photo by Liza Summer

May 2021