

HOW DOES THE CIRCULAR ECONOMY CHANGE JOBS IN EUROPE?

Upskilling and reskilling for a just transition

A transition to a circular economy is taking place in Europe and the speed of this transition is not expected to slow down. The transition provides an opportunity to build an ecologically sustainable society and create new employment opportunities. Yet the social impacts of a circular transition have received little attention. On the journey to a circular economy, some jobs will be lost, new jobs will emerge and most jobs will change in one way or another. This paper looks into the social impacts of a circular economy in five European countries and four sectors. Special attention is paid to the quality and number of circular jobs, the required skills and the inclusiveness of the transition. These perspectives are crucial for enabling a just transition to a circular economy.

Sitra working paper

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How does the circular economy change jobs in Europe?

Upskilling and reskilling for a just transition

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Foreword

The crises that are threatening the future of our planet – climate change, biodiversity loss and the depletion of natural resources – are the result of the way we consume materials and products. A shift to a circular economy in which production and consumption are based on services instead of ownership is already underway and will have significant impacts on our everyday lives.

It is of utmost importance to foresee the effects of the change and use this knowledge to ensure a just transition. This means an inclusive and participatory process in co-operation with different groups in society and especially those most affected.

The transition to a carbon-neutral circular economy will affect employment and jobs; some jobs will be lost, new jobs will emerge and most jobs will change in one way or another.

In the future, the principles of a circular economy need to be integrated into all professions, including engineering, design, industrial processes and customer service. This will generate new requirements for education and skills training, and demand for opportunities to make career changes.

We hope that this paper can spark debate and support policymaking to manage the transition, one which has already started and is expected to accelerate with the implementation of the European Green Deal and one of its key priorities, the EU's new Circular Economy Action Plan.

Mari Pantsar

Director, Sustainability Solutions,
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Summary

The transition to a circular economy comes with environmental, economic and social impacts. Research, policy initiatives and public discussion have mostly focused on the environmental and economic aspects of the transition. The social impacts have received less attention.

This paper looks at the social impacts of a circular economy in five European countries: the Czech Republic, Finland, France, the Netherlands and Poland. We focus on the social impacts on four sectors that play an important role in the transition to a circular economy and that represent the focus areas of the EU's Circular Economy Action Plan: plastics, textiles, construction and electronics.

In the construction sector, circular design of the built environment will mean some fundamental changes for the entire sector and create new lines of work. Updated skills are required throughout the construction value chain, including skills in the area of digital solutions. In textiles, a circular transition is likely to create new jobs in the sorting and recycling of textiles, production, and reuse and repair services in Europe. Highly skilled jobs in eco-design, fibre development, clothing-as-a-service models and marketplaces for second-hand clothes are expected to emerge.

Increasing the sorting and recycling rates for plastics is expected to create new jobs in the EU. New unique combinations of skills are needed to support the growth of a circular plastics economy. In the electronics sector, jobs are likely to be created in design, repair and material recovery. There is a growing demand for skills related to the recycling of e-waste.

The shift to a circular economy brings about various social impacts. Perhaps the most obvious one is the quality and quantity of jobs gained, lost or transformed in one way or another. We anticipate that the circular economy principles and practices will affect almost every job in the future, which will require learning new skills. Embedding circular economy thinking into formal and informal education at all levels and in all industries is vital to enabling a just transition to a circular economy. The shift to a circular economy concerns the whole of society. Therefore, we aim to create an inclusive circular economy that is planned together with the groups and regions most affected by the change.

To ensure quality of jobs, required knowledge and skills, and long-term competitiveness, we present recommendations for decision-makers at both the EU and national level. A just transition to a circular economy can be advanced by:

- Renewing the economy by supporting and scaling up circular economy solutions and innovations.
- Proactively anticipating and addressing the employment effects of a circular transition.
- Updating workers' skills to ensure a just transition and incorporating the circular economy into all levels of education.
- Designing policies supporting a circular economy in an inclusive way.
- Developing and applying indicators for the social impacts of a circular economy.

1 Introduction

The circular economy is an economic model that aims to optimise the system as a whole and tackle the root causes of biodiversity loss, climate change and depletion of natural resources.

Rather than producing more and more goods, in a circular economy we get more value from what we have, and we keep that value in the economy for as long as possible through smarter design, digital solutions and a shift from owning products to using services.

The transition to a circular economy is already underway and the speed of the transition is not expected to reduce. The European Commission's new Circular Economy Action Plan published in March 2020 provides a great incentive and structure for the transformation to a circular economy in the EU.

The Circular Economy Action Plan, one of the main elements of the European Green Deal, constitutes an action plan for making the EU's economy sustainable (European Commission, 2020b). The need to make the transition to a sustainable economy in a just and inclusive way is also widely recognised in the European Green Deal. The Circular Economy Action Plan puts product policy at the core of the circular economy, by proposing requirements for products' durability, reparability, upgradability, maintenance, reuse and recycling under a sustainable product policy framework (*ibid.*).

The transition to a carbon-neutral circular economy is an opportunity to build an ecologically sustainable society and create new employment opportunities. However, research, policy initiatives and public discussion on the circular economy have focused on the environmental and economic aspects. The social impacts have received less attention.

The circular economy's social impacts are many and complex. Perhaps the most obvious social impact of the circular economy is connected to the quality and quantity of jobs; in a shift from a linear economy to a circular economy it is likely that some jobs will disappear, new jobs will emerge and most of the jobs will change in content. New jobs require upskilling and reskilling workers in various industries and professions. The shift to a circular economy should be planned in an inclusive way to ensure that the new economic model is as just as possible.

The circular economy introduces a completely new direction to the current linear economy. In a circular economy, materials retain their value much longer, for instance through modular design, repair and maintenance services, and the reuse of materials in a new product. This shift in the economy's logic and operation models leads to changes in working lives, skills requirements and society on a broader scale.

In recent years, some effort has been made to study job market-related impacts, for example concerning job creation and job losses (Cambridge Econometrics, Trinomics and ICF, 2018; International Labour Organization, 2019; OECD, 2020). There is also some literature on the potential skills needed in a circular economy (Circle Economy, 2020b). Many of these studies have focused on modelling and estimating the potential of the circular economy to create new jobs, but evidence of materialised impacts remains marginal and has not received enough attention.

A circular transition is of course not the only trend shaping the future of work. Technology becoming embedded in everything and ageing populations becoming increasingly diverse are other megatrends that

should be looked at while analysing the future (Sitra, 2020a).

This paper looks at the social impacts of a circular economy in five European countries: the Czech Republic, Finland, France, the Netherlands and Poland. We focus on the social impacts on four sectors that play an important role in the transition to a circular economy and that represent the focus areas of the EU's Circular Economy Action Plan: plastics, textiles, construction and electronics. The paper will examine the changes in skills needs and the overall quality of jobs in the chosen sectors. In conclusion, we present recommendations to support a just transition.

The transition to a circular economy offers a chance to build a socially more sustainable future. It is crucial to ensure that the social dimension is well understood and incorporated into the current narrative of a circular economy and the policies promoting it. This would allow better decision-making and holistic planning that can contribute to a truly just circular transition.

With this paper, our aim is to further understand circular business models, the circular economy's social impacts on employment and reskilling, at the national and EU level, and to spark discussion around these topics.

2 How to understand the social impacts of the circular economy

Understanding the social impacts of the transition to a carbon-neutral circular economy requires anticipation and foresight. This also helps avoid the negative effects of the transition and boost the positive ones. A just transition can be managed with an adequate combination of social, employment and education policies together with investment and effective foresight. Without knowledge on how the quality of jobs and skills needs in a circular economy will change, policymaking cannot support the transition and manage its various side effects sufficiently.

The circular economy is not expected to progress at the same rate across the European Union. There are structural differences between EU member states and regional economies in terms of levels of innovation, degrees of education, investment in R&D and socio-economic structure. All of these and many other factors affect the pace of the transition. The countries selected for this paper vary in maturity when it comes to the extent of the circular economy, their economic structures and their emerging circular sectors and industries.

This paper focuses on four sectors that have also been identified in the EU Circular Economy Action Plan: textiles, electronics, plastics, and construction.

This paper and its results are based on expert interviews (see Appendix 1) in the focus countries conducted between September and November 2020. In addition, research, statistics and company cases are used to support our findings.

This paper will examine the following questions:

1. How has applying circular economy practices changed work in the selected industries?
2. How has applying circular economy practices changed skills requirements in the selected industries?
3. How will circular economy practices change work in the selected industries in the future?
4. How will circular economy practices change skills requirements in the selected industries in the future?
5. What are the most significant social impacts of applying circular economy practices now and in the future?
6. How can a just transition to a circular economy be ensured?

For the Czech Republic, the paper focuses on the construction sector, as it appears to be the most advanced sector in the country in terms of circular innovation. In general, a circular economy is slowly gaining momentum, and there is growing interest in the potential of circular solutions to cut CO₂ emissions in heavy industry.

For Finland, the review focuses on textiles and electronics. The textile sector is actively fostering innovation in the areas of textiles recycling, the sharing economy and circular textile design. The electronics sector was chosen because of its advanced technological know-how and innovative circular business models.

France has set ambitious national targets and proposed legislation that enhances the circular economy. Plastics was chosen as the sector to be examined in France because of its potential to increase the recycling rate of plastics and its legislative initiatives that specify that by 2025 100 per cent of plastics must be recycled and that the use of single-use plastic packaging will end by 2040.

For the Netherlands, the paper focuses on construction and plastics. The Dutch construction sector is a pioneer in circular innovation and the circular economy is strongly embedded in urban development plans, for example in Amsterdam and Rotterdam. When it comes to plastics, the Netherlands has one of the highest plastic recycling rates in the EU and is home to prominent plastic recycling innovation.

In Poland, the circular economy is still in the early phases but is slowly progressing. The greatest potential is seen in the electronics and textile sectors, as these sectors are growing rapidly and hold large potential for developing a circular economy within Poland's greater economy.

Countries and sectors covered

Czech Republic

- Construction

Finland

- Electronics
- Textiles

France

- Plastics

Poland

- Electronics
- Textiles

The Netherlands

- Construction
- Plastics

3 How does the circular economy change work?

3.1 Construction

- Applying circular practices could create 6.5 million new jobs in the European construction sector by 2030. An important driver for job creation is the rising rate of recycled construction waste.
- A circular design of the built environment could radically transform the construction sector and create new lines of work.
- Jobs are likely to shift from the construction of new buildings to the renovation of existing ones.
- The location of construction work might increasingly move off-site with more modular construction.
- New digital platforms and tools are emerging that support circularity in the construction sector.
- Skills throughout the construction value chain need to be updated. New skills include designing modular, recyclable and energy-efficient buildings, expertise in about renewable and recyclable materials, reverse logistics, coding, innovation skills and manual skills related to repair, maintenance and recycling.

The European construction sector directly employs around 15 million people mainly in small and medium-sized enterprises (European Commission, 2012; European Federation of Building and Woodworkers, 2021). Construction is one of the focus areas of the European Circular Economy Action Plan and there are numerous attempts in the EU to steer the sector towards circularity through binding regulations such as the Waste Framework Directive and non-binding guidelines such as the EU Construction and Demolition Waste Management Protocol. The EU is currently also updating its

“The construction sector is moving towards pre-manufacturing – the “Legoisation” of construction work. This would mean fewer people on building sites and more in factory settings.”

Construction Product Regulation to support the circular economy.

Construction and demolition waste represent one of the largest waste streams in the EU, accounting for between 25 and 30 per cent of the total waste generated (European Commission, 2019e). There is very great potential for circularity in the construction sector as many of the materials have high resource value and recycling technology is well established. That said, according to 2011 statistics from the European Commission, the recycling rates for construction and demolition waste in EU countries vary from only 10 per cent to as high as 90 per cent.

A circular construction industry gets more value from existing buildings

Applying circular practices could create 6.5 million new jobs in the European construction sector by 2030 (International Labour Organization, 2018). An important driver for job creation is the increasing recycling rate for construction waste.

The circular economy is yet to be strongly incorporated into the European construction sector’s practices. According to Eurostat, 1.1 million jobs in the European construction sector were connected to the “environmental economy”, including the energy renovation of buildings and energy efficiency (Eurostat, 2020b). Zero Waste Scotland and Circle Economy (2020) estimate that 2.7 per cent of all jobs in the construction of buildings, civil engineering and specialist construction activities in Scotland are circular.

Efforts to promote a circular economy in the construction sector have mostly focused on the recycling of construction waste and improving buildings’ energy efficiency. The Netherlands stands out as a European champion in the circular built environment, but even there raw materials remain unused after demolition because of a lack of information about the materials stored in buildings and an underdeveloped secondary materials market, among other things.

There is, however, a growing circular construction movement in Europe and several construction projects have been executed with circular principles. The interviewees highlighted that, as the circular built environment is only just emerging, its social impacts are still very case-specific and occur through the actions of individual companies.

What would a circular construction sector look like? It would take advantage of modular building design, use renewable raw materials and secondary raw materials, focus on improved refurbishment activity and reuse, and aim for zero waste generation from construction and demolition activities.

New jobs and skills throughout the construction value chain

Innovations that can upcycle construction waste and maintain its value could further extend recycling activity and increase the number of jobs connected to it. The environmental impact on construction activity would also notably decrease if virgin material production were replaced with recycled materials.

Jobs in recycling and waste management are often perceived as “dirty jobs” that are physically demanding and low paid. The attractiveness of these jobs is an important aspect to consider. Also, the recycling of construction and demolition waste has so far been mostly downcycling, where the value of the material decreases as it is recycled for low-value applications. For example, in Finland, about 80 per cent of concrete waste from construction and demolition is downcycled to concrete aggregate that can be used in road construction.

Emerging second-hand marketplaces for construction and demolition waste are creating new jobs in reverse logistics and material diagnostics. New recycling activity is improving the profitability of the demolition activity, for example in France. This supports jobs related to materials resale and waste logistics. To ensure that the recovered materials are properly identified and safe for reuse, new jobs related to the technical diagnostics of used construction materials are also emerging. These jobs require specific know-how about materials and skills related to their safe reuse.

The need for design, service design and refurbishment skills

To allow a more efficient recycling of demolition waste, new digital platforms and tools are emerging. Digital solutions can improve the transparency and traceability of material flows in buildings and materials management, increase asset sharing between those in the construction sector, or foster second-hand materials exchange activity by matching supply and demand. In the future, there may be a growing number of jobs in the digital services sector supporting a circular built environment.

Holistically circular design of the built environment may profoundly change construction and create new lines of work. Modular construction practices can change the location of construction jobs from on-site to off-site. Modular parts are produced in a factory setting, which decreases the amount of work needed on-site upon construction. This can decrease the local job creation impact of construction projects, as construction work will increasingly move to the factories producing the prefabricated parts. However, because of automated processes, the job impact of these factories may remain rather modest.

It is anticipated that the circular economy will create a substantial amount of new work in the service industry connected to buildings. Because of the interest in and incentives for improving material and energy efficiency, for extending the lifetime and prolonging the value of buildings, and for increasing the flexible use of premises, new services for upkeeping, maintaining and refurbishing buildings are likely to emerge.

Renovation of public and private buildings is central to the EU’s Green Deal and, overall, it is expected that in the future an increasing share of jobs in the construction

“When the public sector started using the circular economy in public tenders, all companies in the construction sector began to understand that the change is transformative and is happening, and they needed to start increasing their own circular economy and sustainability capabilities.”

sector will focus on the renovation of buildings rather than new construction.

The growing demand for sustainable and circular construction is having an impact on the knowledge and skill requirements throughout the construction value chain. New requirements for public procurement processes already mean that the knowledge and understanding of architects and construction firms in some EU countries are having to change.

A limited number of self-taught specialists already possess and are putting into practice the skills needed for circular building design and construction. A small num-

ber of schools and professionals' associations offer courses in circular construction, for instance in Finland.

However, circular thinking is not yet mainstream in the formal construction education in Europe. According to the interviewees, there is a lack of know-how about demolition activity that accommodates materials reuse and the use of secondary raw materials in new buildings. In the future, circular thinking must be natural and comprehensible for all workers in construction. This requires adapting to new work practices, such as the use of digital tools.

ERC-Tech's concrete upcycling technology creates new jobs along the construction value chain

For 20 years, ERC-Tech (Efficient Recycling Concrete Technology) has turned recycled concrete, bricks, paving, ceramics and other construction materials into a reusable concrete mixture. This has generated new jobs in the production of concrete mixtures and prefabrication, the recycling of construction and demolition waste, and the production of aggregates.

Many of these jobs demand specific skills, such as knowledge about how to extract the recyclable materials from a demolished building or how to integrate the recycled concrete into new construction projects. The materials extracted from a demolished building are in most cases treated and reused locally in new construction projects.

CONSTRUCTION

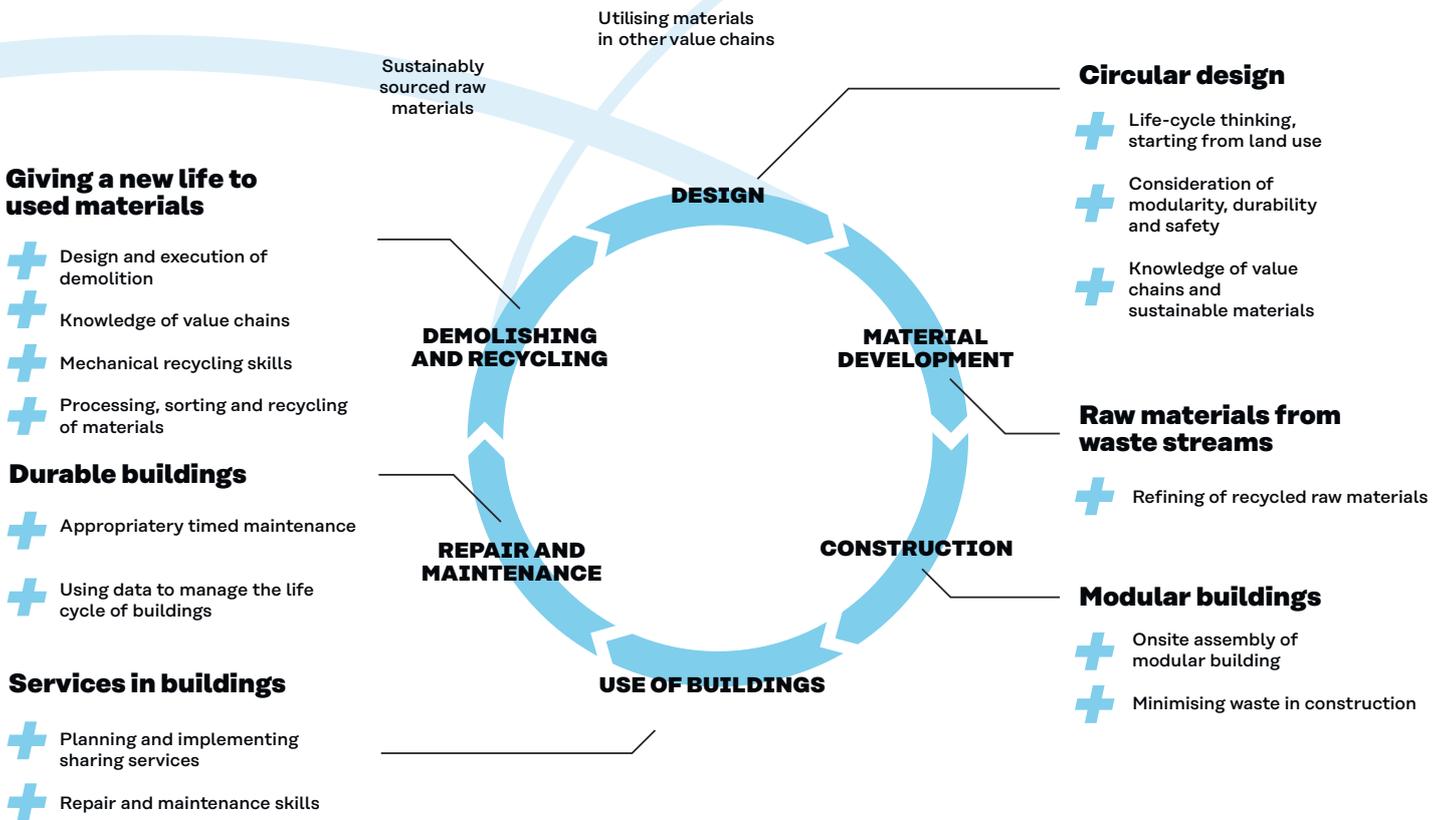


Image 1. Skills required in a circular construction industry

3.2 Textiles

- Circular jobs in the textile industry can be divided into three levels: the collection, sorting and recycling of end-of-life textiles; new innovative and ecological textile fibres; and extending the lifetime of textile products through repair and rental services.
- New skills are required in areas such as circular textile and fibre design, textile recycling processes, the use of secondary or renewable materials, textile-as-a-service models and second-hand marketplaces. Furthermore, skills need to be updated so that textile products are made with more diligence to ensure their durability. Reverse logistics in the textile industry also requires new innovations and skills.
- New skills are required for instance in circular textile and fibre design, textile recycling processes, utilising secondary or renewable materials, textile as a service -models and second-hand marketplaces. Furthermore, skills need to be updated so that textile products are made with more diligence to ensure their durability. Reverse logistics in the textile industry also requires new innovations and skills.
- Circular business models allow for access to sustainable and high-quality textile products and create new sharing models in which consumers can benefit financially from services that are based on sharing, renting and recycling.
- Job creation in Europe could lead to job losses outside Europe if the currently global production chains are replaced with more local ones.

The textile and clothing industry covers a range of activities, from the processing of natural or synthetic fibres into yarns and fabrics to the production of goods like clothing, shoes and carpets. The industry is global and is known for complex value chains.

The current linear value chains cause significant

environmental harm through the extensive use of water, land and chemicals for textile production, which also accelerates the loss of biodiversity. Globally, the industry generates about 10 per cent of all greenhouse gas emissions (World Bank, 2019). The sector is also infamous for human rights issues across its value chain.

Do rising textile recycling rates come with new jobs?

The European textile and clothing industry employs around 1.7 million people and generates an annual turnover of 178 billion euros (EURATEX, 2019). Historically, the sector has been an important employer in Europe, but over the past few decades production has shifted mainly to Asia. The sector in the EU largely consists of small and medium-sized businesses.

The EU is a net importer of textiles; according to the European Environment Agency (2019), in 2017, the EU produced 7.4 kg of textiles per person while consuming nearly 26 kg per person. In the European Union, textile collection rates are estimated to be at 25 per cent, though there are large differences between countries. EU consumers discard about 11 kg of textiles per person per year (ibid.). Used textiles are mainly incinerated or landfilled. Only a small share of textiles is collected and, after that, reused, converted to new materials or sent outside of the EU (EURATEX, 2020).

There are several initiatives and investments focusing on improving textile recycling in the EU. EU waste legislation obliges member states to collect textiles separately by 2025. As a result of the new legislation and an increasing awareness of the industry's negative impacts, new recycling facilities are currently planned in several EU member states, including Finland, the Netherlands, Belgium, Germany and Italy. Also, the EU Textiles Strategy, due to be finalised in 2021, seeks to empower consumers to choose sustainable textiles and have easy access to reuse and repair services.

Currently, the level of circularity is considered low in the textile sectors with circular efforts being promoted

by innovative start-ups focusing on things like more sustainable fibres. Circular action in the textile sector includes, for example, eco-design to ensure circular textile products, new circular fibre innovation, clothing as-a-service, uptake of secondary raw materials, reuse and repair services, second-hand stores and peer-to-peer marketplaces, and improved sorting and recycling of textiles.

While textile collection and recycling already have a modest impact on jobs across Europe, the future potential is substantial. Textile recycling is currently extremely labour-intensive as the sorting needs to be performed by hand. Textile recycling is the most labour-intensive recycling activity in the Netherlands (Circle Economy, 2020a).

The European Apparel and Textile Confederation (EURATEX) has estimated that for every one thousand tonnes of clothing that are recycled, approximately 20 new jobs are created (EURATEX, 2020). Considering the large volumes of textile waste, the potential for job creation in recycling is significant. With increased collection, sorting and recycling, the textile sector has the potential to create 120,000 jobs in the European Union. Currently about 2.8 million tonnes of textiles are already separately collected in the EU and this amount is expected to double by 2025 as a result of the new EU directive (ibid.). In addition, new jobs are created indirectly, for example in logistics.

If a circular transition takes place as anticipated, textile recycling will significantly change in the near future with new recycling facilities improving the capacity of textile waste recycling and generating a more valuable output. These recycling facilities will be on a larger scale and will use high-level technology and auto-

mation. Based on the scenario above, it could be estimated that, despite automation, textile recycling will still offer new job opportunities in the collection, handling and recycling of textiles and have a net positive impact on jobs. However, the nature of the work in the recycling facilities may change with automation leading to demand for new, advanced sets of skills.

Will the circular economy bring textile jobs back to Europe?

Circular thinking can boost reuse businesses and repair services that extend the lifetime of textiles. New circular businesses are making buying second-hand easy and attractive. These businesses include hand-picking vintage clothing or running a digital resale platform, and there are several new jobs that the growing second-hand market can create: for example, jobs in material and product diagnostics, product maintenance and marketing. Jobs in clothing-as-a-service may also increase in the future.

The sustainable consumption trend is reintroducing people to using traditional repair services for clothing and footwear. These very traditional craft services have not been crucial in a linear textile system, in which consumers often consider the use of these services to be too costly or time-consuming and prefer to buy new (Diddi and Yan, 2019). The circular economy challenges this idea and encourages people to repair what they already have. Repair services for clothing and footwear are mostly local and include manual work, and the circular economy could have a notable impact on the number of these jobs across the whole EU.

Local businesses in Europe are increasingly using the circular economy to improve their competitiveness

“We are losing many craftsmanship skills. Lots of services and companies has disappeared. I can see there is a growing need to have more craftsmanship but there is the issue of education in terms of this field and how traditional skills are translated to the new generation.”

against bigger global brands, but this has not yet substantially affected the number of jobs in the sector.

The transition from linear to circular manufacturing practices could yield substantial opportunities for the European manufacturing base in the long run. In the initial phase of a circular transition, the impact on job creation is limited, but in the longer term, new innovative solutions can have significant multiplier effects on new job creation, especially in production.

Currently, production of fabrics and clothing is largely outsourced to countries with a cheaper workforce. If European companies succeed in scaling the production of circular or recycled fibres, it could also encourage companies to relocate production back to Europe. In the future, the European textile sector could be built on local supply chains and closed material loops, bringing significant and numerous new job opportunities.

New production capabilities and skills are needed across the whole European textile ecosystem. The need for eco-design skills will be further emphasised by the EU's upcoming Circular Textile Strategy. Skills related to the recycling process, reverse logistics and the use of secondary raw materials in textiles are especially important as they help to close the loop. In a circular economy,

designers should know how to work with recycled materials, utilise new renewable materials and support the recyclability, for example by designing out parts that hinder recyclability, such as certain mixes of fibres and printing techniques.

A circular textile economy can improve access to sustainable and high-quality textile products. New circular business models make sustainable textile consumption more affordable and challenge the incentive to buy fast fashion. For example, specialist second-hand stores and clothing rental services are already granting many people access to certain high-end brands and luxury goods that they could not afford to buy new. Circularity also helps to maintain the value of textile products, meaning that people can also benefit economically themselves when they take part in the circular economy.

It is crucial to keep in mind that job creation in Europe can lead to job losses elsewhere if the currently global textile production chains are replaced with more local ones. This development can reduce negative social and environmental impacts, but simultaneously lead to unemployment. Further research and foresight are needed to ensure a globally just transition to a circular economy.

ReHubs – A joint initiative to improve and upscale textile waste recycling in the EU

The European Apparel and Textile Confederation (EURATEX) and its member associations have proposed establishing five European textile recycling hubs for the industrial upcycling of textile waste in the EU.

According to EURATEX's estimates, the ReHubs scheme for textiles recycling could create 120,000 new jobs in the EU. These jobs will require skills related to sorting, recycling and reusing textiles (such as collecting, mechanical and chemical recycling, spinning, weaving, knitting, dyeing and garmenting). New business opportunities will arise for operators developing primary processing and automated sorting, mechanical and chemical recyclers and companies using final products.

One of the textile recycling hubs is expected to be located in Finland, a country with an emerging textile recycling industry. There has already been large-scale investment in textile recycling with the building of an end-of-life textile refinement plant in Paimio, which is due to open in 2021. The plant will have the capacity to turn 12,000 tonnes of textile waste into new raw materials per year, representing 10 per cent of the total textile waste generated in Finland.

TEXTILES

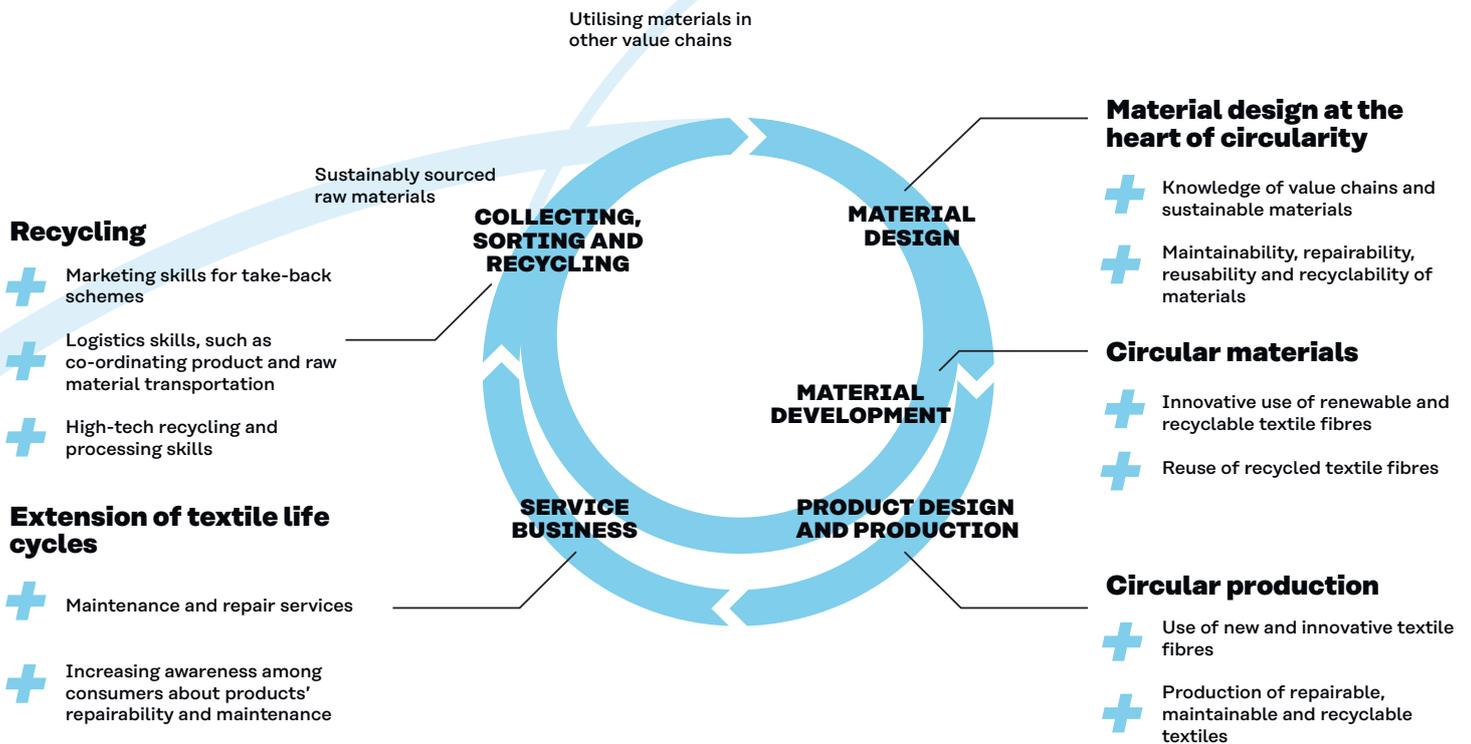


Image 2. Skills required in a circular textile industry

3.3 Plastics

- It is estimated that sorting and recycling of plastics in the EU will increase fourfold by 2030 compared to 2015, creating 200,000 new jobs.
- In a fully circular economy, the number of jobs in the virgin production of plastics will decrease while the sorting and recycling of plastics and production of recycled plastics will increase.
- The recycling of plastics needs expertise and know-how in the fields of chemistry, quality management, food and beverage production and waste recycling as well as new co-operation between these areas.
- New skills are required for instance in developing mechanical and chemical plastics recycling, finding and scaling materials that replace plastics, designing new business models for plastics use and marketing them. It is likely that the circular plastics industry will require the design and use of new types of machinery. New innovations and skills are required in reverse logistics also.
- New unique combinations of skills are needed to support the growth of the circular plastics economy.

The plastics sector directly employs 1.6 million people in the EU (Plastics Europe, 2019). In Europe, 40 per cent of plastics go into packaging, 20 per cent into building and construction, 10 per cent into automotive production and 6 per cent into electronics. Adopting circular practices in the plastics sector will therefore crucially influence sustainability in other sectors.

The plastics sector has significant potential to reduce CO₂ emissions with circular solutions. The potential of material recirculation in the plastics sector is substantially high, but an efficient material recirculation needs measures and enablers, including technology development for sorting, automation and chemical recycling, and large-scale specialist recycling operations and regional integration of markets for recycled materials (Material Economics, 2018).

There are vast differences inside the EU when it comes to plastics recycling and whether plastic waste is landfilled or incinerated. Since 2016, the recycling of plastics has doubled while landfilling has decreased by nearly half in the EU. Still, 25 per cent of plastics go to landfill (Plastics Europe, 2019). Plastic packaging has the highest recycling and recovery rate, but it has been

estimated that between 125,000 and 500,000 tonnes of plastics end up in waterbodies in the EU. Additionally, 75,000 to 300,000 tonnes of microplastics are released into the environment on a yearly basis. (European Commission, 2018)

From public awareness to a circular economy

Consumer awareness about the negative environmental impacts of plastics litter is high in Europe and the topic is also on the political agenda in most EU countries. In 2018, the EU introduced its Plastics Strategy with an ambition to make all plastics packaging in the union recyclable by 2030, to reduce the consumption of single-use plastics and to restrict the intentional use of microplastics. In 2020, over 80 companies, governments and non-governmental organisations formed the European Plastics Pact to accelerate the circular economy transition in the plastics sector. Action is indeed needed because the global demand for plastics continues to rise.

Circular action in the plastics sector has three focus areas in the EU: improving the recyclability of plastics; increasing plastic waste management and separation processes; and developing new sustainable plastic grades. The most substantial result of these actions until now has been an increase in the amount of plastics used in energy production or recycled to become secondary raw materials.

In a fully circular economy, all plastics should be processed into new raw materials to replace virgin plastics and only the waste that cannot be reprocessed because of contamination or other reasons would end up in incineration. The market for bio-based plastics is growing and developing rapidly, but still constitutes only one per cent of the total market share of plastics production.

New jobs ranging from recycling to design

The recycling of plastics is already creating new jobs across the European Union. These include labour-intensive jobs in pick-up and mechanical waste processing and specialist, highly skilled jobs in the design and management of the recycling processes. It has been estimated that the recycling of 10 000 tonnes of plastic waste employs roughly 23 people full-time in collection, 17 in sorting and pre-treatment and 30 in recycling (Deloitte, 2015). Transport, energy recovery and landfill activity for

an equivalent amount of plastic waste only employs one person.

The EU has envisaged that, by 2030, its plastics sorting and recycling capacity will increase fourfold compared to 2015. This could create 200,000 new jobs across Europe (European Commission, 2018). The interviewees estimated that chemical recycling facilities would be more centralised and therefore their impact on jobs not as evenly spread as in mechanical recycling facilities. However, mechanical and chemical recycling would not necessarily compete with one another but focus on different plastic grades.

An increase in the share of bio-based plastics could result in increased job opportunities and the profitability of the agriculture and forestry sector. The forestry sector in particular is showing a lot of interest in developing new wood fibre-based alternatives to plastics.

In a fully circular plastics economy, the virgin production of plastics would decrease significantly, which would decrease the number of jobs in the sector. The interviewees estimate that many who currently work in virgin plastics production could find new employment in plastics recycling. However, the skill requirements and the location of jobs may differ and thus a reskilling of the workforce is crucial.

New unique circular skillsets

New unique combinations of skills are needed to support the growth of the circular plastics economy. Plastics recycling is a new, rapidly evolving sector that is moving from creating low-value products to products with high technical value. For example, developing new waste

separation processes, improving the decomposition of plastics and creating innovative new ways to produce safe secondary plastic grades for the food industry all require new technologies and people with the ability to run these operations. There is thus a growing need for a workforce that has new combinations of skills, for example from chemistry, quality management, the food and beverage industry and waste recycling.

In addition to technical skills in plastics recycling, there is a need for technical skills in the use and maintenance of machinery used in recycled plastics production. Also, circular skills are needed for the design of products that consider the use of secondary or bio-based raw materials and the recyclability of products. Furthermore, skills such as marketing are necessary to inform business-to-business clients and consumers about the properties, characteristics and recycling of secondary or bio-based plastics products. The development and production of bio-based plastics requires specialist knowledge about biomaterials and their characteristics.

Finally, there is a demand for skills in reverse logistics and supply chain management to improve the supply of plastics for recycling processes and reuse. The skill demands of the plastic recycling sector are not currently considered in education, for example, knowledge about plastics conversion in schools. As a result, pioneering waste recycling companies have had to educate employees themselves.

Veolia plastics recycling

The production of plastics is expected to triple globally by 2050. At the same time, only 9 per cent of plastics are recycled globally. In Europe, the recycling of plastics has doubled in recent years but 25 per cent still end up in landfill.

Veolia's plastic recycling process includes several stages: collection and transport of plastics to the treatment centre; pre-sorting and sorting the plastics; hot water washing to remove impurities; crushing to reduce plastics to particles; formulation to achieve the desired product quality and specific technical characteristics; and extrusion to regenerate the material. The different stages require various skills, such as knowledge about and handling of different types of plastics, chemicals and production processes. The process also leads to indirect jobs, for instance in reverse logistics.

PLASTICS

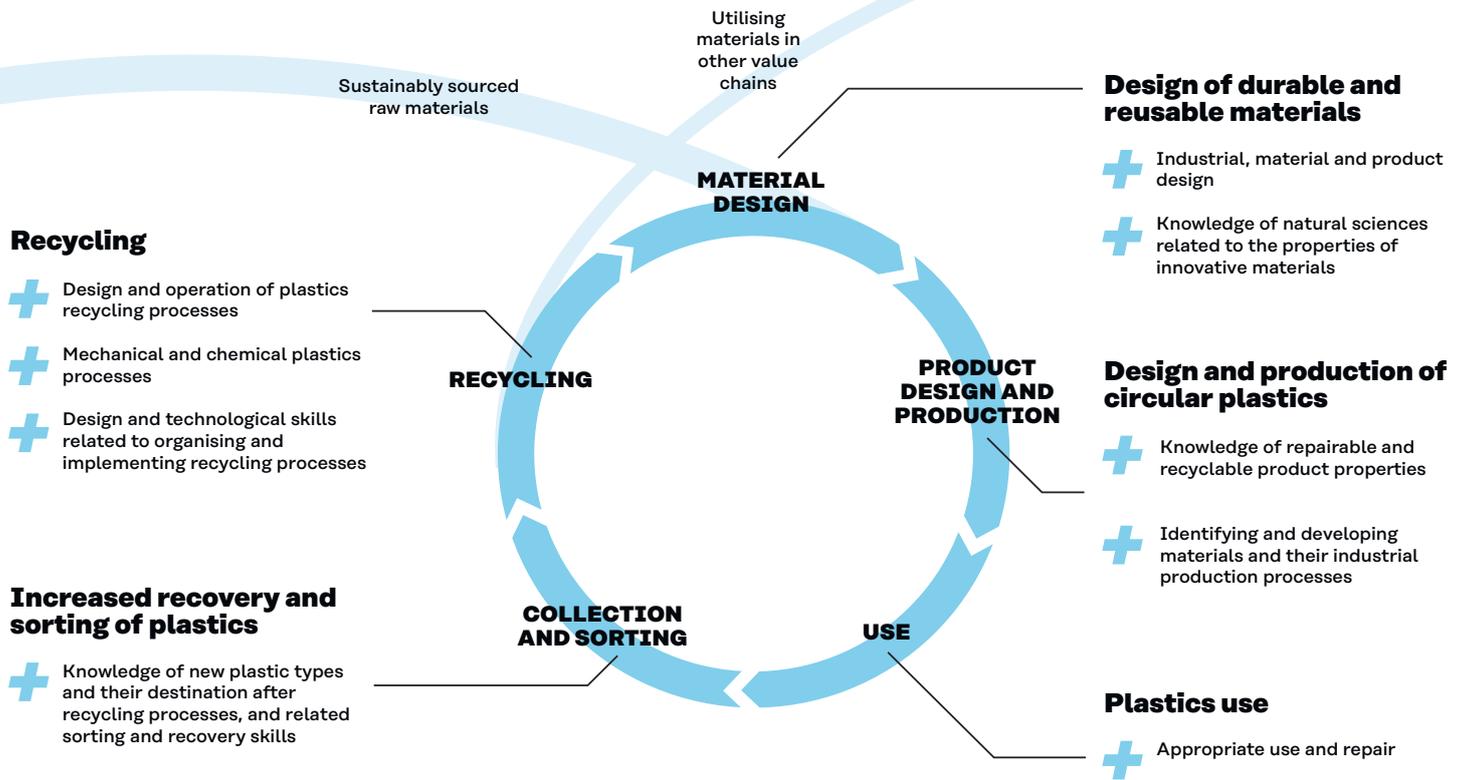


Image 3. Skills required in a circular plastics industry

“People with a unique mix of skills are needed. We are inventing these jobs and we are also having to develop internal training because there is a lack of people who are knowledgeable about recycling plastics.”

3.4 Electronics

- Electrical and electronic equipment waste is the fastest growing waste stream in the EU. Rising recycling rates are expected to create new jobs despite automation.
- The focus of circular solutions in the electronics sector should be on product design. Product design is at the core of a circular economy, since it is estimated that approximately 80 per cent of products' environmental impacts are determined in the design phase.
- New circular business models and producer ownership models are also expected to increase circularity in the electronics sector.
- New skills are required in designing modular, repairable and recyclable devices and materials, utilising recycled or renewable materials in electronic devices, recycling a wider range of electronics parts, maintaining, repairing and refurbishing electronic devices, developing electronics-as-a-service business models and reverse logistics. Furthermore, urban mining will require new innovations and skills.

The amount of electronic equipment in the world is increasing as new digital solutions are adopted and processes are designed smarter. Because of breakdowns and planned obsolescence, new software requirements and rapidly changing fashion, small consumer electronics in particular are used for relatively short periods and are easily discarded. Waste electrical and electronic equipment (WEEE or e-waste) is the fastest growing waste stream in the EU with a 2 per cent annual growth rate (European Commission, 2020c). Electronic devices contain high proportions of valuable raw materials, yet only about 33 per cent of all e-waste collected in the EU is currently recycled (Eurostat, 2019).

The circular economy in the electronics sector is expected to grow as a result of the EU's new Circular Economy Action Plan, which includes a Circular Electronics Initiative that aims to promote a circular economy for electronics by widening the scope of the Ecodesign Directive, promoting consumer rights through the right-to-repair initiative and developing collection and treatment processes (European Commission, 2020a). The action plan's sustainable product policy and Circular Electronics Initiative are highly commended, and their

implementation and enforcement should be a number one priority of the new Circular Economy Action Plan.

In practice, the electronics sector's transition to a circular economy will include a large-scale adoption of circular design principles by electronic manufacturers, for example modularity, reparability, use of recycled raw materials and familiarisation with new models of ownership like leasing and sharing.

Circular electronics is more than just recycling

Recovering materials from e-waste is important, but the focus of circular solutions in the electronics sector should be on product design. Product design is at the core of a circular economy, since it is estimated that approximately 80 per cent of products' environmental impacts are determined in the design phase (European Commission, 2014).

New circular business models and producer ownership models are also expected to increase circularity in the electronics sector. Business models based on product-life extension and on product, material or performance as-a-service require new skills related to circular jobs. Jobs and skills in the maintenance, repair and refurbishment of electronic and ICT devices are likely to increase, as are those in the area of providing high-level customer service to the users of these devices. The potential to boost the transition to a circular economy and transform consumption with new business models is significant and widely recognised by policymakers (European Commission, 2020a; Sitra, 2020b).

Since 2003, the producers of electronic devices have been responsible for the waste management and recycling of electronic waste in the EU, these services being free of charge for consumers. Despite this, most countries have struggled to meet the WEEE recycling targets.

Recycling of e-waste in Europe is relatively expensive and to avoid extra costs electronic waste has been illegally shipped outside of the EU where it is most of the

"If we recycled our electronics more, we would be able to produce electronic products in Europe. Now they are produced in China and we are dependent on these." (Interviewed expert)

time treated by the informal recycling sector. The European Commission adopted a “WEEE Package” in 2017 that strives to further improve the formal recycling of electronic devices by establishing a harmonised methodology for electrical and electronic equipment and for waste derived from them. (European Commission, 2020c)

From small-scale recycling to robust business

Current circular economy activity in the electronics sector in the EU is focused on encouraging the second-hand use of electronic goods, improving the collection of e-waste for recycling and developing better recycling technology. There is some indication that electronic device manufacturers are aspiring to systematically increase the amount of recycled material content in their devices, but it remains unclear whether or how these targets will influence recycling activity in the EU.

The recovery of raw materials from electronics devices, notably metals and metal-based components, has been an economic driver for the recycling of certain electronic equipment and had already created some employment in waste logistics and materials recovery before the imposition of regulatory demands. It was estimated in the early 2000s that recycling 1,000 tonnes of e-waste in London created roughly 40 jobs in just the collecting and sorting processes alone (Friends of the Earth, 2010).

The EU directives on and targets for WEEE throughout the 2000s have made the e-waste recycling schemes the responsibility of the producers and have targeted ever higher degrees of recycling. Although automation has now made the sorting processes more efficient, the number of jobs related to the recycling of e-waste continues to increase, as do the recycling rates. A recent Irish study concluded that the recovery of e-waste currently lost to improper treatment (destined for scrapyards) in Ireland could create and support 12 to 14 full-time

“You need to be able to work [on circular economy themes] with all the people along the value chain – from designers to people running the plant.”

equivalent jobs (McMahon, Ryan-Fogarty and Fitzpatrick, 2020).

The growing second-hand market for consumer electronics is creating new jobs. In comparison to new electronic devices, preparing e-waste for reuse creates new opportunities for employment and business in the areas of maintenance, refurbishment and upgrade, and has a positive overall impact on job creation in most scenarios (Pini et al., 2019).

Reuse centres that redistribute used electronic devices such as TVs, audio equipment and kitchen appliances have traditionally been important employers for people in supported employment schemes. The same applies to textiles. In Finland for example, “reuse centre worker” is among the most common job titles of people within these schemes.

There are also examples of turning the redistribution of used electronics into robust business, meaning that an increasing number of upcycled consumer electronics are purchased from established market suppliers rather than reuse centres or peer-to-peer marketplaces.

These businesses are elevating the second-hand market and offering an alternative to the purchase of new electronic devices that is reliable and safe, for example through warranties. These new types of circular businesses, using models such as product-as-a-service and product-life extension, are also providing upcycled electronic devices to companies, and new jobs are being created to support this business element in addition to those jobs in the repair and refurbishment field.

Multiple skills are needed to move towards circularity

There is a growing demand for skills in the recycling of e-waste, such as developing recycling technologies to facilitate the recycling of all materials included in electronic devices.

With the current recycling technology, it is not possible to recover all the materials in electronic devices. The amount of recovered material is good in terms of mass, but the most valuable and scarce raw materials can only be recovered in tiny quantities. To improve the recovery of materials, there is a demand for new technical innovations and skills in the recovery of raw materials from old devices.

Repair and refurbishment jobs in the upcycled electronics market require precise technical know-how about materials, software and product properties. New

policies on product design alter the knowledge needs of the industrial designers of electronic devices.

The producers of electronic devices face new requirements for environmental product design. There is an emerging need for new skills and knowledge in circular electronics design and manufacturing processes. For example, industrial designers are increasingly required to devise ways to make the devices easier to repair and recycle, and to incorporate secondary raw materials into the production process.

The growth of the second-hand market and refurbishing services is improving access to electronic devices and digital services. These require general business skills in addition to the circular skills detailed above. Used electronics are often much more affordable than new devices. The formalisation of the second-hand market is offering a safe way to buy these products, minimising the risk of scamming and mitigating the risk of early product failure.

Swappie grows by selling second-hand mobile phones

Swappie is a Finnish second-hand electronics start-up founded in 2016. The company buys old Apple mobile phones directly from consumers, refurbishes them and sells them to new owners through their own stores and a web shop. In 2019, the company sold over 100,000 used iPhones.

In 2020, Swappie employed over 400 people and is estimated to double its workforce in 2021. Employees hold a range of positions, including the refurbishment of devices in the company's factory, and technology, marketing, sales, customer service and HR-related positions.

Fairphone — Mobile phones redesigned

Fairphone is a mobile phone company that has circularity at the heart of its product design process. The phones are designed to ensure longevity, easy repair and modular upgrades. They are composed of modular parts that the consumers can easily replace themselves in case of a fault or a new update. The modular design also supports better recycling. Fairphone is an example of electronic product design that already fulfils the European Ecodesign requirements that are currently being reviewed as part of the EU's Circular Economy Action Plan and that are expected to be confirmed by the end of 2021.

Fairphone currently employs professionals in supply-chain management, legal affairs, IT and customer support. Redesigning a mobile phone requires new thinking and new skills. For instance, repairing the phones and teaching consumers to repair their own phones are examples of skills that Fairphone needs to obtain. Furthermore, since Fairphone strives to source only socially responsible materials, such as minerals from conflict-free zones, the company needs expertise in understanding the human rights impacts of their supply chain.

“STEM subjects (science, technology, engineering and mathematics) are especially important in a circular economy as they enable the design of new materials and products.”

ELECTRONICS

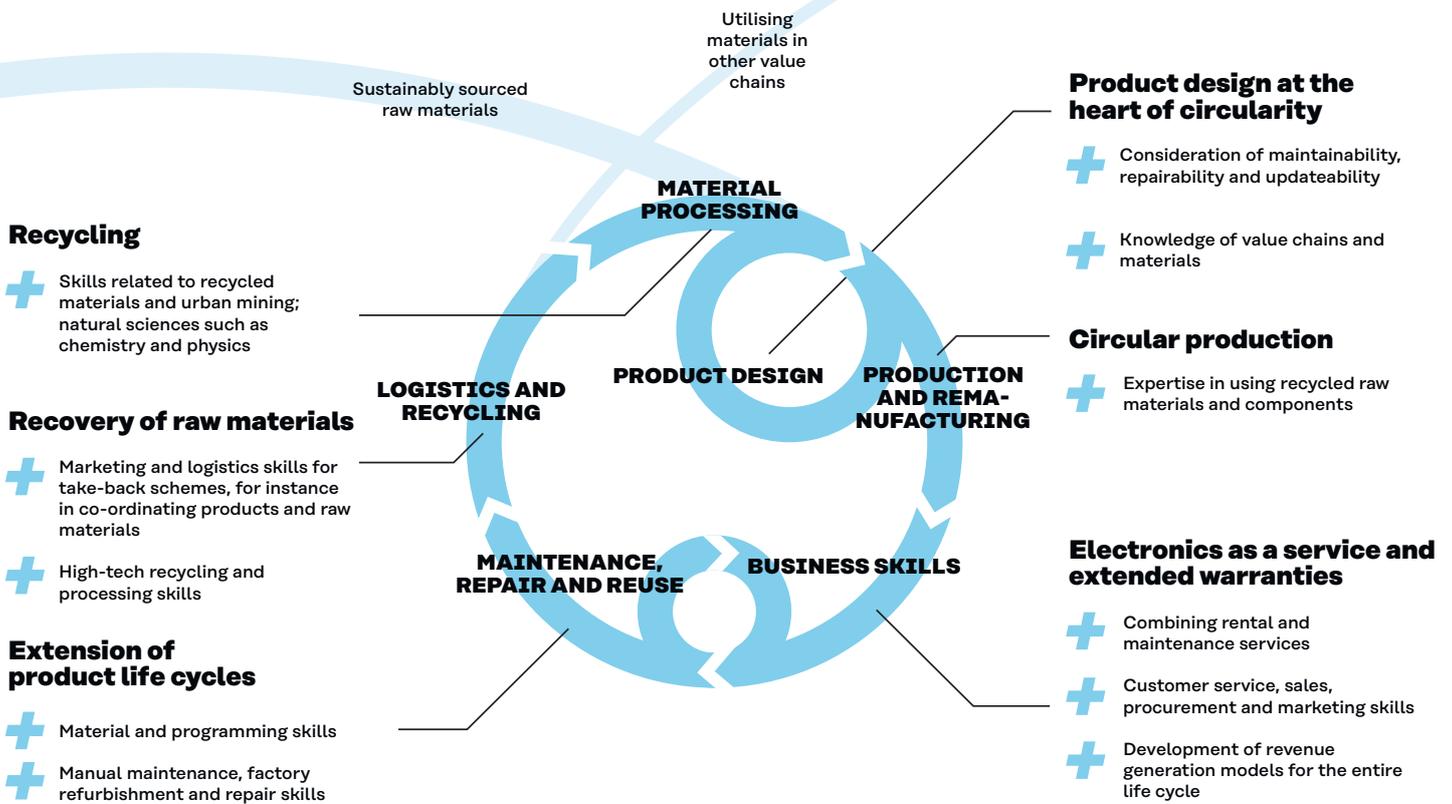


Image 4. Skills required in a circular electronics industry

4 Social impacts of the circular economy

The circular economy's impacts on people are inevitable, yet underexplored. We look at the circular economy's social impacts through three perspectives. Perhaps the most obvious social impacts of the **circular economy are the quality and quantity of the circular jobs**. In a shift to a circular economy it is likely that some jobs will disappear, new jobs will emerge and most of the jobs will change in content.

New jobs require learning and skills. In the future, every professional should be able to apply circular thinking in their work, regardless of what they do. We need to invest in teaching circular economy principles in formal education and lifelong learning.

The social impacts of the circular economy concern the whole of society. Therefore, the goal must be an **inclusive circular economy** that is planned together with the groups and regions most affected by the change.

4.1 Quality and quantity of the circular jobs

There is a growing number of studies that focus on estimating the number of circular economy jobs. The EU Commission's impact assessment estimates that applying circular economy principles in all sectors and industries has the potential to create 700,000 new jobs across the EU by 2030, many of which will be in SMEs (Cambridge Econometrics, Trinomics and ICF, 2018).

The OECD estimates that, globally, there will be 18 million new jobs in the circular economy by 2040. However, since some jobs will be lost in the transition, the net job creation is estimated at 1.8 million (OECD, 2020).

The International Labour Organization estimates that, globally, the transition to a circular economy would create 78 million jobs by 2030 and destroy 71 million. Of the workers in jobs to be lost, nearly 49 million are expected to find an equivalent job in another industry (International Labour Organization, 2019).

Generally, the circular economy transition is still in the early phase and only a small fraction of jobs are regarded as circular, even in the countries considered to be circular pioneers. For example, in the Netherlands, the share of circular jobs in 2015 was estimated at 8.1 per cent (Circle Economy 2017).

Circular jobs can be high-tech jobs best suited to people with a tertiary-level degree or manual or service-sector jobs accessible for people with a basic or secondary-degree educational background.

So far, the discussion about circular jobs has focused on high-tech jobs, for example at universities or start-ups. However, operating recycling facilities, for instance, requires tasks that create job opportunities for people with lower levels of education. For now, most companies in the countries covered in this paper still operate in a business-as-usual manner. However, there are innovative start-ups that are advancing the circular economy and, similarly, some pioneering larger enterprises that are creating and implementing circular economy solutions.

Circular economy innovations have introduced new jobs that did not exist in a linear economy; for instance jobs in the production of secondary or bio-based materials. Furthermore, the shift towards a circular economy has revived some occupations that have been less in demand in recent decades, like jobs in maintenance or product repair. At the same time, circular thinking is being integrated into existing fields like procurement, architecture, marketing and product design. This makes it difficult to single out and evaluate the quantity and quality of circular economy jobs.

Moving towards closed loops can have important impacts on local or regional employment, for instance in recycling, maintenance, repair and reuse. Recycling in a circular economy is local or semi-local, and it requires work in the areas of waste logistics, management and mechanical recycling. The materials may need to be transported to reach a recycling plant, but they should stay within the same economic area to preserve the value of the material locally. We already see that plastics recycling is semi-local and supplies recycled material for the

"Social impact is rather an unintended outcome of being environmentally sustainable. Social impacts are indirectly part of the circular economy."

plastics industry. Research agrees that recycling is more labour-intensive than landfilling or incineration, and that the total impact on jobs is positive.

Similarly, the circular economy presents an opportunity to revive employment in the areas of maintenance and product repair. For example, recycling cotton textiles into new fibre in northern Europe can create a local material source for textiles. This could mean establishing entire textile value chains locally and reviving jobs that have been lost, such as those that involve spinning yarn.

Service jobs are likely to increase in the circular economy as products are rented as services and the lifetimes of products are increased by regular maintenance and repair services. We already see indications of this development in the form of car, clothing or bicycle rental and sharing services. Furthermore, it has been shown that services play an essential role in circular businesses through the value chain and the services trade has grown considerably more than the trade in goods in the past 15 years. In addition, service exports generate more added value than export of goods. (International Institute for Sustainable Development (IISD), 2020).

Technology supporting the circular economy is developing quickly, and the employment effects of new technological solutions remain to be seen. There have been estimates that jobs in the recycling of waste electrical and electronic equipment will increase with the overall increasing recycling rates, but others note that upcoming technologies make recycling more efficient and less labour-intensive. Thus, the new jobs that might have already emerged as a result of increased recycling activity may not be around for long.

According to the International Labour Organization, most of the people whose jobs will become obsolete as the circular economy transition proceeds are likely to find a new job in the same occupation in another industry. For instance, people no longer employed in the

production of new products from virgin raw materials can find employment in repairing, recycling or reusing existing products, or in rental services. Overall, the ILO estimates that two per cent of jobs are globally at risk from energy sustainability and circular economy development (International Labour Organization, 2019).

The quality of work is a concern in all industries and within all business models, and the circular economy models are no exception. Emerging circular practices can cause situations where existing legislation does not protect workers in vulnerable situations. For example, estimates show that the informal waste management sector employs between 12.5 and 56 million people worldwide (Ramusch and Lange, 2013). The sector is especially significant in low- and middle-income countries, where labour legislation is often developing or poorly supervised. In many cases, these workers are not reached by companies' voluntary human rights due diligence monitoring either. The industry is currently notorious for its negative human rights impacts, such as child labour and low salaries. In the short term especially, it is possible that waste-picking activities will increase through the informal sector. This may require countries and companies to reassess their current practices and legislation to guarantee decent working conditions in the informal waste management sector.

Furthermore, the increased share of workers in platform and gig economy jobs has sparked discussion about the labour ethics of these models. Platform and gig economy jobs are expected to increase as we move towards the circular economy, for instance product-as-a-service models. Therefore, it is possible that countries will have to assess their current labour legislation concerning workers within the platform economy.

The circular economy presents an opportunity to boost a green recovery and renew the labour market. But understanding the quantitative and qualitative impacts of

“An example: we tried to employ two people, we wanted to talk to the five best candidates, but the headhunter found only one. We have to train our staff ourselves.”

the circular economy transition is important in order to manage the transition in a socially sustainable way.

4.2 Learning and skills

The interviews suggest that nearly all jobs will change in one way or another as we move towards the circular economy. To support the transition, we will not need a vast number of circular economy specialists, but rather professionals from various fields who can apply circular economy principles in their work, regardless of what they do.

From a learning and skills point of view, circular thinking needs to be applied in every profession and in every educational programme. McKinsey (2020) estimates that, in the EU, the net-zero transition might result in the need to retrain up to 18 million workers, in particular to fill jobs that do not yet exist (almost 3.4 million by 2050).

The need to train people for circular jobs is already a reality in pioneering circular companies, caused by the lack of suitable candidates to perform these new jobs. Interviewees stated that because of the lack of circular education in education facilities, many companies have found it necessary to create their own training programmes for the new circular jobs they offer.

Often these jobs require expertise in a variety of subjects. For example, plastics recycling companies need people who possess skills in both chemistry and recycling technology. This illustrates that new combinations of skills from different academic fields or a mix between academic and craftsmanship skills are needed. This poses a challenge for the education systems across the Euro-

pean Union which, by default, often differentiate between academic fields and different levels of education.

Currently, circular economy principles seem to be most integrated into higher education as opposed to primary or vocational schools or lifelong learning. According to the Ellen MacArthur Foundation's international comparison (2018), higher education institutions in Finland and the Netherlands offered the most circular economy-related courses. Out of the 138 higher education institutions offering circular economy courses across the world, 38 per cent were located in these two countries.

These circular economy courses focus mainly on environmental rather than economic aspects. Overall, circular economy-related courses included topics on environmental aspects, design, social aspects, policy levers and circular business models. Digital technologies, the service industry and systems thinking were among the topics least covered in the courses on the circular economy.

The findings in this paper highlight the need to harness the education systems to facilitate the transition to a circular economy. Circular economy thinking and practices need to be integrated into all educational levels and all industries. The transformation needs to happen in formal education, but also in informal education, for instance by training people who are currently in work.

Alongside developing educational content, we need to develop the social structures that enable career change or re-education. Education and skills development are effective ways to ensure that the transition to a circular economy will be as fair as possible.

“In the Netherlands, you normally decide at a very young age whether you go into ‘academia’ OR ‘craftmanship’. Normally this has been binary option – either or. However, the circular economy can combine these two aspects and could bring these kinds of combination jobs back to the Netherlands.”

4.3 An inclusive circular economy

A circular economy is not automatically more or less inclusive than the linear economy, but the shift to new business models presents an opportunity to simultaneously solve social issues and increase the inclusivity and equality of different people and groups.

There are several perspectives through which the inclusivity can be addressed.

- **Diversity and inclusivity in working life.** The shift to a circular economy brings about new jobs, but will there be opportunities for people with diverse backgrounds, physical abilities or educational skills? Diversity and inclusion in the workplace need to be developed in linear and circular business models alike, but the creation of new jobs is an opportune moment to take a fresh look at the emerging occupations and their inclusivity.
- **Gender equality.** The International Labour Organization estimates that both job losses and job creation will be concentrated in male-dominated (mainly medium skilled) occupations. The ILO estimates that jobs occupied by men will experience a net loss of 5 million by 2030 globally. For women, the outcome looks somewhat different – a net increase of 12 million jobs is anticipated. Advancing the circular economy transition will therefore mean an increase in the employment chances for women, which will to some extent happen at the expense of net job losses for men. However, this increase in employment opportunities is not expected to offset prevailing gender employment inequalities (International Labour Organization, 2019). Reskilling and upskilling will be required to address the gender impacts of the circular economy transition. This means providing both women and men with the skills needed for new jobs and, through that, decreasing occupational gender stereotypes and offsetting the negative impacts of the circular economy transition on the employment of men.
- **Accessibility of products and services.** Circular business models, such as sharing, renting and product-as-a-service models, can increase the accessibility of products, for instance for low-income households who can rent products for short-term use instead of buying them at a higher cost. However, there is a risk that circular services will be made

available or attractive only for people living in certain areas or with certain abilities, language skills or backgrounds.

- **Inclusion of all regions in the move towards a circular economy.** The shift to a circular economy is likely to stimulate jobs on a local level, for instance in closed material loops and in different renting, repair and reuse services. This may have implications throughout global supply and value chains that rely on the sale and handling of primary resources. It is possible that the work currently performed across various continents will be concentrated in locally active closed loops. To ensure a globally just transition, it is important to support the circular economy transition simultaneously across all continents, countries and regions. In practice, support can be given in the form of trade policies, funds or capacity building.

An inclusive circular economy can be created by designing the transition together with the people and groups that are most affected by the shift from a linear economy to a circular economy. There are good examples of the engagement of different stakeholders in the climate change context, especially in relation to the energy transition (Sitra, 2020c).

Dialogue with key stakeholders such as workers, labour unions, trade associations, small and medium-sized companies, regional representatives and local communities has proven to be an effective way to understand and integrate different viewpoints into the design of the transition, including policy preparation and decision-making.

“People with a unique mix of skills are needed. We are inventing these jobs and we are also developing internal training. We are currently developing training materials for our staff. There is a lack of people who can teach us about recycled plastic. There are no public initiatives on this. Teachers are not really able to talk about it.”

Just transition recommendations for policymakers

Recommendation 1: Commit to social dialogue at all levels as an integral part of plans to reduce emissions and adapt to the impacts of climate change.

Recommendation 2: Establish plans, strategies and funds for a just transition supported by just transition funds.

Recommendation 3: As part of the just transition, provide public and employer support for retraining, reskilling and formalisation of work for vulnerable workers.

Recommendation 4: Invest in a low-emission infrastructure that creates decent jobs, particularly in vulnerable communities, regions and sectors.

Recommendation 5: Ensure that climate-related disclosures by companies also include disclosure of employment risks and just transition plans to address them.

Source: Just Transition Centre, 2017.

“From a corporate perspective, it is difficult to separate the work in the circular economy from other work – ultimately, many workers are involved in the circular economy as part of other wider work.”

5 Recommendations for a just transition

The European Green Deal and one of its top priorities, the EU's new Circular Action Plan, are central to setting targets and incentivising the transition to a carbon-neutral circular economy in Europe. The goal is to increase competitiveness while ensuring that no one is left behind.

The following section includes recommendations for both EU and national-level decision-makers to ensure quality of jobs, required knowledge and skills, and long-term competitiveness. These recommendations apply in the wider context of technology becoming embedded in everything and the changing future of jobs.

Recommendation 1: Renew the economy by supporting and scaling up circular economy solutions and innovations

Implementation of the EU's Circular Economy Action Plan under the European Green Deal is crucial for creating a level playing field for a competitive carbon-neutral circular economy. Investing in and scaling up circular innovations is one way to support the creation of circular jobs.

Scaling up circular solutions and innovations requires sufficient funding and investments. Efforts to mobilise public and private investment in the circular economy and fill financing gaps are vital.

Recommendation 2: Proactively anticipating and addressing the employment effects of a circular transition

Circular economy policies should be designed with consideration for their effects on the labour market and changing competence needs. Only by anticipating the change can education, social and employment policies respond to the upskilling, reskilling and education needs. Digital solutions are an important part of the circular economy and digital skills are essential.

There is a need to proactively anticipate and identify sector-specific skills and education needs. This will help

design and direct policy measures and provide support where it is needed.

Recommendation 3: Updating workers' skills to ensure a just transition and incorporating the circular economy into all levels of education

New circular business models, such as product-life extension or product-as-a-service require new skills. The skills needs should be further studied and foreseen in various industries and professions.

Opportunities for upskilling, reskilling and for a career change are essential, and at the heart of a just transition. Policies and social structures that support these should be developed accordingly.

The circular economy needs to be integrated into all levels of education, as the changing nature of many jobs will require knowledge about how to apply circular principles, such as resource efficiency, know-how about new materials or new service models in different professions, and digital skills.

It is crucial that employees are given opportunities for upskilling, reskilling and continuous learning to respond to changes in competence needs and to stay ahead of the curve. Increased dialogue between companies and trade unions to address and develop ways to increase employees' skills is essential.

Recommendation 4: Designing policies to support an inclusive circular economy

A circular transition will not happen without changes in consumer behaviour and in business logic. New circular business models require competence changes, new earnings logic for businesses and changes in consumer behaviour, to mention a few. This needs policies that can manage and steer the change.

There is a need for dialogue on different levels and between different interested parties, groups and commu-

nities. Special focus should be placed on increasing the capability to adopt circular principles in the companies – especially SMEs – sectors and regions most affected and on those who could benefit from the transition.

Recommendation 5: Developing and applying indicators for the social impacts of a circular economy

Indicators measuring the social impacts of a circular economy need to be developed and monitored to tailor optimal social, employment and education policies.

Indicators measuring, for instance, salary and education levels, the sectors providing circular jobs and their location should be added next to the Eurostat circular economy indicator group analysing societal behaviour, such as consumers' willingness to pay more for durability. Indicators measuring the quality and quantity of circular jobs should be developed and monitored across the EU and by individual member states..

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7 Annex

Interviewees

Czech Republic

Soňa Jonášová, Founder and Director, Institute of circular economy

Jan Maršák, Director of the Waste Management Department, Ministry of the Environment of the Czech Republic

Petr Marek, Director of Business Development, ERC-TECH

Vojtěch Vosecký, Chairman of The Steering Group for Circular Economy, City of Prague

Finland

Pia Björkbacka, Adviser for International Affairs, Central Organisation of Finnish Trade Unions SAK

Hanna Hämäläinen, Ministerial Adviser, Ministry of Employment and the Economy

Pirita Lindell, Head of Sustainable Development, Technology Industries of Finland

Shahriare Mahmood, Sustainability Director, Spinnova

Satumaija Mäki, Chief Advisor of Sustainability and Circular Economy, Finnish Textile & Fashion **Kati**

Pitkänen, Senior Research Scientist, Finnish Environment Institute

Pia Tanskanen, Head of Environment, Nokia

France

Marine Gibert, Head of Circular Economy Project, Les Canaux

Olivier Jan, Partner, Deloitte France

Philippe Moccand, Collection and Sorting Director, CITEO

Sven Saura, Recycling Director, Veolia France

Marline Weber, Head of Legal Affairs & European Affairs, Institut National de l'Économie Circulaire

Netherlands

Guido Braam, C Creator, C-Creators

Joke Duformount, Project Manager, Circle Economy

Freek van Eijk, Director, Dutch Circular Hotspot

Hildagarde McCarville, CEO, Veolia Netherlands

Jan Raes, Global Sustainability Advisor, ABN Amro

Poland

Ewa Chodkiewicz, Senior Environmental Policy Specialist, WWF Poland

Marta Karwacka, Owner, SENSE Sustainable Thinking

Małgorzata Koszewska, Associate Professor & Vice Dean, Lodz University of Technology

Grzegorz Skrzypczak, Member of the Management Board, Elektroeko

Dorota Zawadzka, Director of Energy and Climate Change Department, Polish Confederation

Lewiatan

Tiivistelmä

Siirtymä kiertotalouteen vaikuttaa ympäristöön, talouteen ja yhteiskuntaan. Tähän asti tutkimus, poliittinen valmistelu ja julkinen keskustelu ovat keskittyneet pääosin siirtymän taloudellisiin ja ympäristöön liittyviin näkökulmiin. Sen sijaan laajemmat yhteiskunnalliset vaikutukset ovat jääneet vähemmälle huomiolle.

Tässä työpaperissa tarkastellaan kiertotalouden sosiaalisia vaikutuksia viidessä Euroopan maassa: Tšekissä, Suomessa, Ranskassa, Alankomaissa ja Puolassa. Vaikutuksia tarkastellaan neljällä sektorilla, joilla on tärkeä rooli kiertotalouteen siirtymisessä. Sektorit vastavat myös EU:n kiertotalouden toimintasuunnitelman neljää painopistealuetta. Tarkasteltavat sektorit ovat muovi, tekstiili, rakentaminen ja elektroniikka.

Rakennusalalla kiertotalouden mukainen rakennettun ympäristön suunnittelu voi uudistaa koko toimialaa ja luoda uudenlaista työtä. Päivitettyä osaamista, kuten digitaalisiin ratkaisuihin liittyviä taitoja, tarvitaan koko rakentamisen arvoketjussa. Tekstiilialalla kiertotalouteen siirtyminen todennäköisesti luo Eurooppaan työpaikkoja tekstiilien lajitteluun ja kierrätykseen, tuotantoon, uudelleenkäyttöön ja korjauspalveluihin. Korkeaa osaamista vaativia työpaikkoja odotetaan syntyvän ekosunnitteluun, kuitujen kehittämiseen, vaatteet palveluna malleihin sekä käytettyjen vaatteiden markkinapaikkoihin.

Muovin lajittelu- ja kierrätysasteen nousun odotetaan luovan uusia työpaikkoja EU:n alueelle. Uudenlaisia osaamisyhdistelmiä tarvitaan tukemaan muovin kiertotalouden kasvua. Elektroniikkasektorilla työpaikkoja syntyy todennäköisesti suunnitteluun, korjaukseen, huoltopalveluihin ja materiaalin talteenottoon. SER-jätteen kierrättämiseen liittyvien taitojen kysyntä kasvaa.

Siirtyminen kiertotalouteen vaikuttaa ihmisten elämään ja yhteiskuntaan monin tavoin. Helpoimmin hahmotettavat vaikutukset liittyvät yöhön: työpaikkoja syntyy, katoaa ja monien töiden sisältö muuttuu. Ennakoimme, että kiertotalouden periaatteet ja käytännöt tulevat vaikuttamaan tulevaisuudessa lähes kaikkiin työpaikkoihin, mikä vaatii osaamisen päivittämistä.

Kiertotalousajattelun sisällyttäminen muodolliseen ja epämuodolliseen koulutukseen kaikilla tasoilla ja kaikilla aloilla on tärkeää, jotta siirtymä kiertotalouteen olisi oikeudenmukainen. Siirtymä kiertotalouteen koskee koko yhteiskuntaa. Siksi tavoitteena on osallistava kiertotalous, jota suunnitellaan yhdessä niiden ryhmien ja alueiden kanssa, joita muutos koskettaa eniten.

Esitämme suosituksia päätöksentekijöille sekä EU-tasolla että kansallisella tasolla työpaikkojen laadun, vaaditun osaamisen ja taidon sekä pitkän aikavälin kilpailukyvyyn varmistamiseksi. Oikeudenmukaista siirtymää kiertotalouteen voidaan edistää

- uudistamalla taloutta kiertotalouden ratkaisuja ja innovaatioita tukemalla ja skaalaamalla
- ennakoimalla kiertotalouden työllisyysvaikutuksia ja huomioimalla vaikutukset politiikassa
- sisällyttämällä kiertotalousajattelu kaikille koulutusasteille ja toimialoille
- varmistamalla, että kiertotaloutta edistävä politiikka on osallistavaa
- kehittämällä ja ottamalla käyttöön indikaattoreita kiertotalouden sosiaalisille vaikutuksille.

Sammanfattning

Övergången till en cirkulär ekonomi innebär miljömässig, ekonomisk och samhällelig nytta. Forskning, politiska initiativ och offentliga diskussioner har främst fokuserat på de miljömässiga och ekonomiska aspekterna av övergången. De samhällliga effekterna har fått mindre uppmärksamhet.

Detta dokument tar upp de samhällliga effekterna av en cirkulär ekonomi i fem europeiska länder: Tjeckien, Finland, Frankrike, Nederländerna och Polen. Vi fokuserar på de samhällliga effekterna inom fyra sektorer som spelar en viktig roll i övergången till en cirkulär ekonomi och som representerar nyckelområden i EU:s handlingsplan för cirkulär ekonomi: plast, textil, byggnation och elektronik.

Inom byggsektorn kan en cirkulär utformning av den byggda miljön skaka om hela sektorn och skapa nya arbetslinjer. Uppdaterade kompetenser krävs inom hela byggsektorns värdekedja, inklusive kunskap om digitala lösningar. När det gäller textilier kommer en övergång till ett cirkulärt förhållningssätt sannolikt att skapa nya jobb inom sortering och återvinning av textilier, produktion, återanvändning och lagningstjänster i Europa. Högkvalificerade jobb inom ekodesign, fiberutveckling, kläder-som-tjänst-modeller och marknadsplatser för begagnade kläder förväntas dyka upp.

Ökande sorterings- och återvinningsgrader vad gäller plastmaterial förväntas skapa nya jobb inom EU. Nya unika kombinationer av kompetenser behövs för att stödja utvecklingen av en cirkulär plastekonomi. I elektroniksektorn kommer jobb sannolikt att skapas inom design, reparation och materialåtervinning. Det finns en växande efterfrågan på kunskap relaterad till återvinning av e-avfall.

Övergången till en cirkulär ekonomi medför olika samhällliga effekter. Den kanske mest uppenbara är kvaliteten och kvantiteten på förvärvade, förlorade eller förändrade arbeten, på ett eller annat sätt. Vi förväntar oss att den cirkulära ekonomin principer och praxis kommer att påverka nästan alla jobb i framtiden, vilket kommer att kräva inläring av nya färdigheter. Införande av cirkulärt ekonomitänkande i formell och informell utbildning på alla nivåer och i alla branscher är en av nycklarna för att möjliggöra en rättvis övergång till en cirkulär ekonomi. Övergången till en cirkulär ekonomi berör hela samhället. Därför siktar vi på en inkluderande cirkulär ekonomi som planeras tillsammans med de grupper och regioner som påverkas mest av förändringen.

För att säkerställa kvaliteten på arbetstillfällena, nödvändig kunskap och färdigheter samt långsiktig konkurrenskraft presenterar vi rekommendationer för beslutsfattare både inom EU och på en nationell nivå. En rättvis övergång till en cirkulär ekonomi kan gynnas genom att:

- Förnya ekonomin genom att stödja och skala upp lösningar och innovationer inom cirkulär ekonomi
- Proaktivt förutse och adressera den cirkulära övergångens sysselsättningseffekter
- Uppdatera arbetstagares kompetenser för att säkerställa en rättvis övergång och integrera cirkulär ekonomi i alla utbildningsnivåer
- Utforma policyer som stöder cirkulär ekonomi på ett inkluderande sätt
- Utveckla och tillämpa indikatorer för den cirkulära ekonomins sociala effekter

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