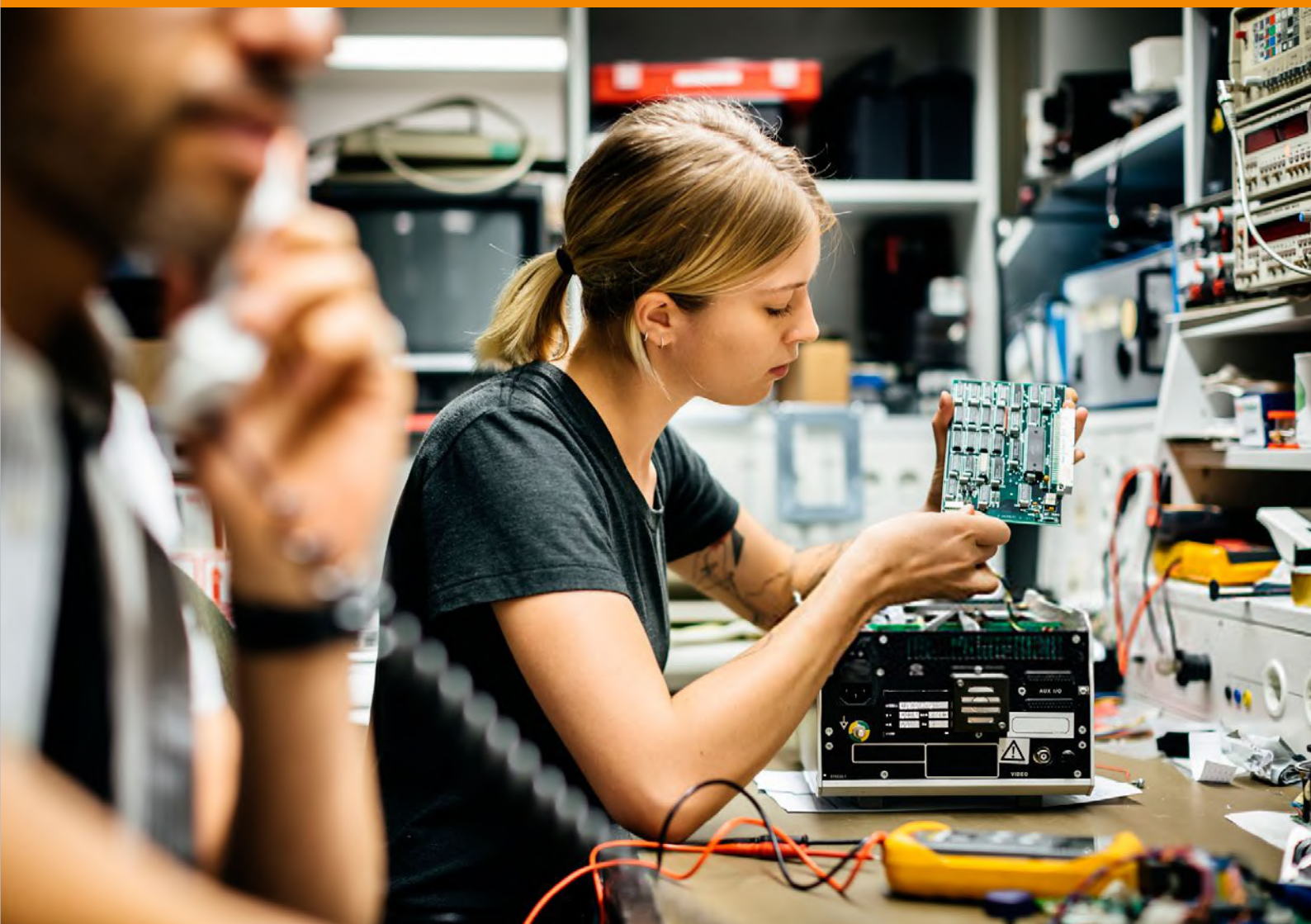


**EUROPEAN SOCIAL
PARTNERS' PROJECT ON**

CIRCULAR ECONOMY

AND THE WORLD OF WORK

Final Report



CONTRACT DETAILS

European Trade Union Confederation- Head of Trade Union Policy
EU Social Partners' Project on Circular Economy

PRESENTED BY

Trinomics B.V.
Westersingel 34
3014 GS, Rotterdam
the Netherlands

ETUC CONTACT PERSON

Mr Félix Mailleux
Email: fmailleux@etuc.org
Tel: +32 2 224 07 02

BUSINESSEUROPE CONTACT PERSON

Ms Rebekah Smith
Email: r.smith@businessseurope.eu
Tel: +32 2 237 65 16

SGI EUROPE CONTACT PERSON

Mr. Guillaume Afellat
Email: guillaume.afellat@ceep.eu
Tel: +32 2 229 21 54

SMEUNITED CONTACT PERSON

Ms. Liliane Volozinskis
Email: l.volozinskis@smeunited.eu
Tel: + 32 2 230 75 99

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**EUROPEAN SOCIAL
PARTNERS' PROJECT ON**

CIRCULAR ECONOMY

AND THE WORLD OF WORK

Final Report

Rotterdam, 24 September 2021

Pavla Cihlarova, Consultant
Oana Forestier, Consultant
Laurent Zibell, Senior Consultant



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EXECUTIVE SUMMARY / PREFACE

This study aims to inform the EU Social Partners on the anticipated impacts of the transition to a circular economy on the world of work via several means, and – based on this analysis - to draw recommendations for future Social Dialogue discussions/actions and for policy-makers. The transition towards a circular economy is one of the flagship policies under the European Green Deal, and the latest Circular Economy Action Plan includes a set of ambitious measures to reach the political objectives set. In such a context, this study is a timely contribution to better understand how the transition will affect companies and workers across the EU, and what role the Social Partners could play in assisting them. The study primarily focuses on 12 EU Member States¹ and 5 sectors of interest – namely manufacturing of raw materials, manufacturing of durable consumer goods, retail, construction and waste management. Data was collected via a desk research, including academic literature, reports and statistics, as well as via stakeholder consultation activities, including 21 interviews, 3 online seminars, and 1 online survey.

After a section that sets the scene of circularity in the EU and the relevance of CE-activities, the study delves into the expected impacts of the transition on five major areas: (1) employment volume, (2) qualification and skills, (3) the competitive position of companies, (4) organization and forms of work and types of contract, and (5) health and safety.

The study has shown overall that some sectors are likely to be negatively impacted in terms of employment volume and competitive position, notably in the upper section of value chains, while those participating in creating material loops (i.e. keeping materials longer in the economy) are likely to benefit in these respects; nevertheless, opportunities exist even in declining sectors to avoid worst-case scenarios. In addition, uncertainties remain as to the impacts of automation and technological advances and in some sectors/countries it is not so

easy to predict the impacts, also since this depends on different starting points.

A more circular economy can bring both cost- and non-cost competitive advantages to EU companies, but to realize the former, support and relevant policy changes should be implemented. Many of the policy changes identified by stakeholders were actually already announced in the 2020 Circular Economy Action Plan. Many of the barriers identified are therefore expected to significantly subdue in the current decade, making being a frontrunner in circularity advantageous for companies across many sectors. As seen in the case studies and expressed by stakeholders during consultation activities, it is important that the circularity of companies goes hand-in-hand with strategies to preserve employability, re-skilling, suitable health and safety safeguards and good working conditions. Collective bargaining, including by way of collective negotiations and agreements are a useful tool in this respect, in line with national industrial relations systems. Overall, the study has shown that an increase in mid-level qualifications is expected and very little skills are expected to become redundant. The most prominent skills needed – which also centre on the main sectors within a circular economy – relate to the handling of secondary raw materials, design and manufacture of new circular products, and work with new, more complex equipment. This entails skilling and re-skilling the workforce as well as integrating the principles of circularity directly into the education of the younger generations, in order to bring the new required knowledge throughout all ages. As seen in the case studies, re-skilling is approached differently across companies.

The sectors in which changes are expected with regards to health and safety are again those expected to benefit the most from the transition in terms of employment volume, namely waste management, manufacturing, repair and maintenance. Companies can be pro-active in this respect, for instance by monitoring health and safety

¹ Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Poland, Slovenia and Spain

approaches in their supply chain, but changes can be disruptive for workers, highlighting an important role for effective social dialogue to discuss changes and implications, in line with national industrial relations systems.

Currently, the 'traditional sectors' have well-established collective bargaining systems/structures, which may not be the case when the activity shifts towards more circular patterns (e.g. from manufacture of primary basic metals to recycling of metals, or from construction to manufacture of pre-fabricated modules), where existing collective agreements might no longer be applicable or may be lacking altogether. Here, a dialogue between employers and employees is crucial, and social partners can play a facilitating role, in line with national industrial relations systems and practices.

Following this EU-level analysis, 12 EU Member States overviews are presented, including a statistical overview on the state of circular economy at national level, expected impacts of the transition in case evidence was available and transmitted by stakeholders, a Strengths – Weaknesses – Opportunities – Threats (SWOT) analysis, and finally recommendations for future action by social partners. Differences were observed in the 12 member

states in terms of progress in the transition to CE. There are also differences in their regulatory frameworks, education and training systems, economic contexts, etc., creating some context-specific difficulties and opportunities. The main common points identified relate to the need to set or further develop public policies to facilitate the transition and support companies and workers in the process, and to further develop education/re-skilling to prepare the workforce to shifting demands.

Then, some concrete examples of circular action taken in companies – both large organisations and SMEs – are highlighted. The examples illustrate what circular actions were taken as well as the impacts that these actions have had on some of the labour related impacts that the analysis focuses on. These examples, combined with EU, national, and sectoral inputs from interviews and seminars, are combined into succinct conclusions. Stemming from this analysis, a number of key recommendations are presented for both Social Dialogue discussions/actions (Textbox 0 1) and policy-makers (Textbox 0 2). For a synthesis of findings on the main labour impacts of CE, both overall and per sector, see Textbox 0 3.



TEXTBOX 0.1. RECOMMENDATIONS FOR ITEMS OF DISCUSSION WITHIN SOCIAL DIALOGUE

- Social Partners should promote the shift to circular economy by raising awareness and informing their members. This could be done by organizing events and webinars on the topic, disseminating reports and translating findings from future research into practical information for workers and enterprises. Social Partners should also further explore the socio-economic impacts of the transition towards circular economy in specific sectors and regions;
- Social Partners should bring the topic of socio-economic impacts of the transition to the Circular Economy on the agenda of Social Dialogue at different levels, e.g. European, national, regional, sectoral and/or company. Social partners should discuss just transition² strategies to move towards circular economy. Where applicable, these just transition strategies should be negotiated through social dialogue and collective bargaining structures. These should aim to deal with socio-economic challenges and optimize employment and competitiveness opportunities for workers and enterprises, and contribute to inclusive and fair transitions;
- At company level, employers and trade union representatives should use Works Councils and Health and Safety Committees – when they exist – or other relevant bodies, to collect information and develop concrete measures to move towards circular business models while ensuring a positive contribution to employment, competitiveness and a fair transition for workers;
- At regional, sectoral and company levels, Social Partners should map and anticipate the needs for training, upskilling and reskilling of workers to support adaptation to the transition to circular economy and enhance employability. Where needs are identified, training should be provided, for example by employers, training institutes, public authorities, etc. with an inclusive approach. Social Partners should also promote continuous and lifelong learning and provide support for enterprises and workers to make progress on upskilling, reskilling and training issues in the field of circular economy, including via the sharing of good practices;
- Social Partners at the different levels should evaluate the consequences of the transition to Circular Economy on collective agreements. They should evaluate whether existing collective agreements should review/revise their scope to adapt to changes in activities or if new ones should be created to cover new activities. Social Partners should also discuss and if possible agree on ways to improve working conditions and prevent informal work in those sectors where problems are identified/prevalent.
- Social Partners should strengthen the implementation of health and safety measures as part of guaranteeing good working conditions in activities related to circular economy transition, in particular in waste handling and re-manufacturing from secondary raw materials;
- Circular economy can bring many opportunities but also some challenges when it comes to enterprises' competitiveness. Social Partners should discuss ways to help ensure the competitiveness of enterprises, taking account of particular needs of SMEs, moving towards more circular business models;
- Social Partners should discuss ways to ensure that the shift to circular business models goes along with improving gender equality and inclusiveness of the labour market.

2 See ILO guidelines for a just transition towards environmentally sustainable economies and societies for all (2015), https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf

TEXTBOX 0.2.
**RECOMMENDATIONS OF DISCUSSION ITEMS BETWEEN SOCIAL PARTNERS
 AND PUBLIC AUTHORITIES**

- Policy makers should properly consider the impact of the transition to circular economy on the world of work. The socio economic dimensions should be fully integrated in policies related to circular economy;
 - In terms of governance, policy makers should involve Social Partners in the design and implementation of European, national, regional and sectoral circular economy action plans and policies;
 - Policy makers should ensure that labour markets and education and training systems are adequately equipped to accompany the transition to the circular economy in a way that supports inclusive and sustainable employment, good working conditions and competitiveness.
 - Policy makers and public authorities should ensure sufficient public and private funds to support a fair and inclusive transition to circular economy, while ensuring competitiveness. These funds should promote quality employment, innovation, reskilling and upskilling. Targeted support for SMEs to move more rapidly to circular economy and to support their workers should also be provided.
- Policy makers should ensure that education and training systems provide future workers with the appropriate skills to support the transition to the circular economy and that incentives exist to ensure availability of manpower for specialized and technical tasks.
 - Supply and demand for secondary raw materials are essential for the development of Circular economy and should be strengthened. Policy makers should create and facilitate a well-functioning market for high-quality secondary raw materials through measures in the Second Circular Economy Action Plan.
 - Policy makers should reinforce the competitive position of circular products on the market, including through stronger market surveillance to ensure fair competition and a level playing field;
 - Policy makers should provide employers, workers and their representatives with a knowledge-based support (e.g. support for information and technical assistance; support for regional or sectoral training centers, support for formal collaborations and knowledge exchange on CE-related activities). This is especially important for SMEs;

TEXTBOX 0.3. SYNTHESIS OF FINDINGS ON THE MAIN LABOUR IMPACTS OF CIRCULAR ECONOMY, OVERALL AND PER SECTOR.

	OVERALL (CROSS- SECTOR)	BASIC METALS, MATERIALS AND CHEMICALS	DURABLE CONSUMER GOODS	RETAIL	CONSTRUCTION	WASTE MANAGEMENT
EMPLOYMENT VOLUME	Small positive effect	Negative effect in primary production. The sector could minimize losses by switching to sorting, purification and manufacture of secondary raw materials.	Possible negative effect (e.g. in manufacturing of electronics, machinery, cars, agriculture and food)	Possible negative effect, dependent upon the incorporation of leasing, renting, sharing, repair and second-hand into traditional retail	Disparities within sub-sectors. Activities linked to innovative materials and renovation expected to see a positive effect.	Positive effect, especially in recycling
QUALIFICATION AND SKILLS	General trend towards more mechanized / technical work and social skills. Increase in mid-level occupation, losses in low-level occupations	Skills to work with irregular inputs (recycled materials)	IT-skills and soft skills (automotive industry) Technical skills for repair and maintenance activities	Deeper knowledge about products (lifetime, maintenance, etc.)	Technicians, craft and related trades for new materials	Increasingly more skilled, technology-intensive/mechanised work, but skillset needed is context-dependent
COMPETITIVE POSITION	Gains, mainly via resource efficiency, capitalising on the market for sustainable and high-quality products. Difficulties linked to cost-competitiveness.	Possible negative effect. Could benefit from switch to recycled materials	Possible negative effect, but these could partly be offset by use of recycled materials and eco-design innovations.	Possible negative effect, but opportunities exist in sharing, second-hand markets, etc.	Those capitalizing on utilization of recycled materials could see positive effects.	Positive effect. CE also helps attracting skilled workers
FORMS AND ORGANISATION OF WORK	Potential changes in the applicable collective agreement. Little impact expected on work contracts. Opportunities for higher quality jobs.					
HEALTH AND SAFETY				No significant negative impacts expected		Automated machinery for precision recycling brings benefits. Exposure to hazardous substances and usage of secondary materials need to be carefully handled.

1 INTRODUCTION

1.1. OBJECTIVES OF THE FINAL REPORT

The objective of the final report is to bring together all the findings of the EU Social Partners' project on Circular Economy, as they were gathered through the different means (desk research and stakeholder consultation, further elaborated upon below), in a comprehensive, yet concise and user-friendly manner. The final report provides findings in the following topics:

- The anticipated impacts of the transition to circular economy in relation to different social aspects (e.g. employment volume, qualifications and skills, working conditions, health and safety of workers and competitive position of companies);
- A number of case studies of companies that are considered forerunners in the transition to circular economy; and
- Recommendations from the EU cross-sectoral social partners for Social Dialogue discussions/actions and to policy-makers, developed on the basis of the research conducted.

1.2. SCOPE OF THE STUDY

The sectors as well as Member States considered within the scope of the study are summarized in the tables below (Table 1.1 Sectors within the scope of the study and Table 1.2 Member States within scope of the study). These sectors and Member States have been considered in the selection of interviewees, both country-specific and cross-sectoral interviews, as well as in the selection of participants in the targeted online survey and in the regional seminars (the specific methodologies are further elaborated upon below).

TABLE 1.1. SECTORS WITHIN THE SCOPE OF THE STUDY

Sectors within the scope of the study
Manufacturing of raw materials
Manufacturing of durable consumer goods
Retail
Construction
Waste management

TABLE 1.2. MEMBER STATES WITHIN SCOPE OF THE STUDY

Belgium
Czechia
Denmark
Finland
France
Germany
Greece
Italy
Netherlands
Poland
Slovenia
Spain

1.3. METHODOLOGIES USED

The analysis presented in this report is based on two main research methods:

1. An extensive desk research, including academic studies, reports from leading organisations in the fields of circular economy and labour (OECD, Circle Economy, SITRA, etc.), and statistical data from Eurostat. The full list of documents consulted for this study is provided in § 7.1.
2. A wide-ranging stakeholder consultation activities, including:
 - Interviews (for a detailed overview, see Table 1.3 and the list of interviewees in § 7.2):
 - 3 scoping interviews;
 - 12 sectoral interviews across five sectors (Construction, Primary raw materials, Durable goods, Waste management, Retail) and with actors active at macro-level or at company level (both from management and workers representatives);
 - 6 interviews with national social partners from 5 different Member States.
 - An online survey. Due to the low response rate (14 responses), the survey results cannot be considered a statistically representative sample of EU companies and organisations involved in CE. Rather, the results should be viewed as a feedback of electronically-administered interviews;
 - 3 online seminars, with broad and active participation and around 40-50 stakeholders present at each workshop (for a detailed overview, see Table 1.4).

These varied sources of information have complemented the insights from previous studies with expert opinion and on-the-ground accounts of how circular activities affect businesses and workers. It is noteworthy to point, however, that the depth of information collected varies from one Member State to the other as some prospective interviewees were unavailable or otherwise unable to share their views when contacted by the research team.

TABLE 1.3. OVERVIEW OF THE INTERVIEWS CONDUCTED

TYPE OF INTERVIEW	TYPE OF STAKEHOLDER	SECTOR	NAME OF ORGANISATION	COUNTRY
Scoping interview	Government	Cross-sector	Ministry of the Environment	Finland
Scoping interview	Government	Cross-sector	SITRA	Finland
Scoping interview	NGO	Cross-sector	Circle Economy	Netherlands
Sectoral interview	Large company (management)	Construction	Saint-Gobain Placoplatre/Isover	France
Sectoral interview	Large company (workers)	Construction	Saint-Gobain Placoplatre/Isover	France
Sectoral interview	Trade union	Construction	European Federation of Building and Woodworkers	EU
Sectoral interview	Trade Union	Durable Goods	industriAll European trade union	EU
Sectoral interview	Industry association	Durable Goods	The European Apparel and Textile Confederation	EU
Sectoral interview	Large company (management)	Primary raw materials	BASF	Germany

Sectoral interview	Large company (management)	Primary raw materials	Hydro	Germany
Sectoral interview	Large company (workers)	Primary raw materials	Hydro	Germany
Sectoral interview	Industry association	Retail	EuroCommerce	EU
Sectoral interview	SME (management)	Retail	MUD Jeans	Netherlands
Sectoral interview	Large company (management)	Waste management	Veolia	France
Sectoral interview	Trade Union	Waste management	European Federation of Public Service Unions - EPSU	EU
National social partner	Employer association	Cross-sector	Confederation of Danish Industry - DI	Denmark
National social partner	Trade union	Cross-sector	German Confederation of Trade Unions – DGB	Germany
National social partner	Employer association	Cross-sector	National Confederation of Crafts and Small and Medium Enterprises - CNA	Italy
National social partner	Trade union	Cross-sector	Netherlands Trade Union Confederation - FNV	Netherlands
National social partner	Trade union	Cross-sector	Trade union federation for Professionals - VCP	Netherlands
National social partner	Trade union	Cross-sector	Slovenian Association of Free Trade Unions - ZSSS	Slovenia

TABLE 1.4. OVERVIEW OF THE WORKSHOPS ORGANISED

WORKSHOP	COUNTRIES	DATE
Workshop 1	Belgium, Czechia, Denmark, Germany	October 2020
Workshop 2	Spain, Finland, the Netherlands, Slovenia	January 2021
Workshop 3	Italy Poland, France, Greece	April 2021

2. SETTING THE SCENE

2.1. CIRCULAR ECONOMY

The Circular Economy was defined by the European Commission in its Action Plan 2015³ as

“where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised”.

This definition includes:

- The design and manufacture of products for longer lifetime, which includes designing and manufacturing products and the accompanying maintenance / repair infrastructure for easier and more efficient maintenance, repair, upgrade, re-use, re-manufacture and recycling;
- The maintenance, repair, upgrade, re-use and re-manufacture of products, which is made easier and more efficient when they have been designed and manufactured for that purpose;
- The recycling of materials, which is made easier, safer and with higher purity and quality when:
 - The products have been designed to facilitate the dis-assembly of parts and the separation of materials at end of life;
 - Hazardous chemicals have been removed from the product or are clearly isolated and designated;
- The use of recycled materials in new products, which is facilitated when the quality and quantity of the recycled material is sufficient;
- The use of sustainably sourced renewable materials in products;
- Asset sharing (e.g. car sharing) that increases the usage intensity of products, and is made more sustainable if products are designed to last long;
- Regenerative practices in agriculture and forestry.

Such measures would entail significant changes in the ways goods are produced (longer lifetime, materials used, etc.), serviced (maintenance, repair), used (e.g. leasing, lending, sharing), and managed at their end-of life (recycling). These changes are not only likely to incur environmental and economic impacts, but also impacts on the labour market: overall employment numbers, but also on qualifications of workers, on the location of their jobs, on the organisation of work and on health & safety at work.

2.2. CIRCULARITY OF THE EU ECONOMY

Since the Circular Economy Action Plan of 2015, the European Union monitors its transition to a Circular Economy. The Commission mandated Eurostat, the official statistical body of the European Union, to monitor a set of indicators describing this transition along some of its key aspects. The most relevant indicators are presented here to give an overview of the status of the circular economy transition in the EU, both for materials flows and employment.

2.2.1. Material flows

Figure 2 1 depicts a material flow diagram for the EU27 (i.e. an illustration of where the materials come from, how they are processed, and where they end up) and includes four broad categories of materials:

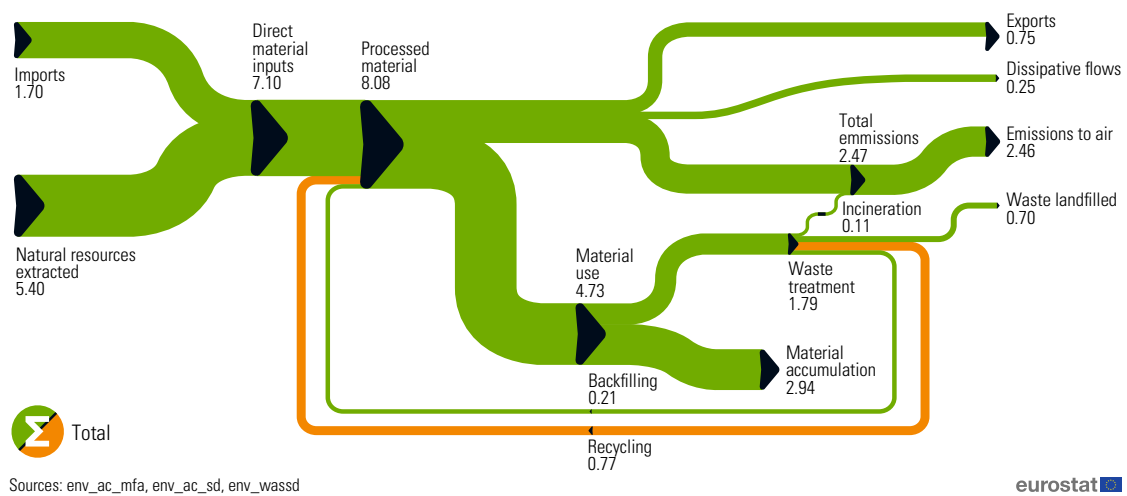
³ EC COM (2015) 614 final, Closing the loop - An EU action plan for the Circular Economy

- > biomass;
- > metal ores;
- > non-metallic mineral materials such as cement, gravel, bricks; and
- > fossil energy material carriers such as oil, coal and gas.

It shows how limited the circular part of the EU's economy is, as visible by the small size of the arrow for recycling. The largest part of the material consumption goes to "emissions to air" (i.e. via the combustion of fossil fuels) and to the "material accumulation" in the form of accumulation of material goods and of new buildings.

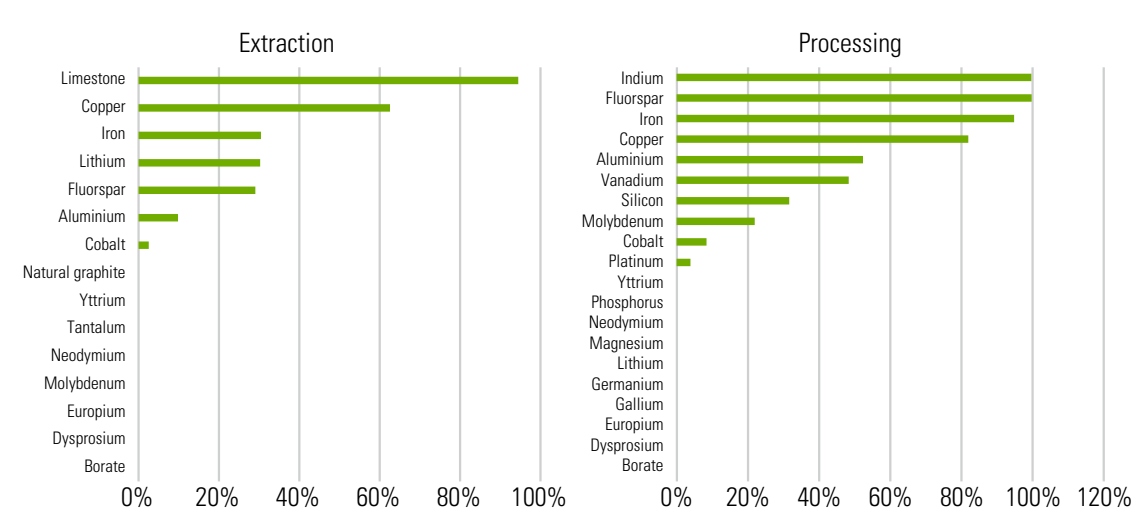
FIGURE 2.1. MATERIAL FLOWS IN THE EU-27 IN 2019 IN GT (BILLION TONNES)

Material flow diagrams 2019 for European Union (27 countries)
Gigatonnes



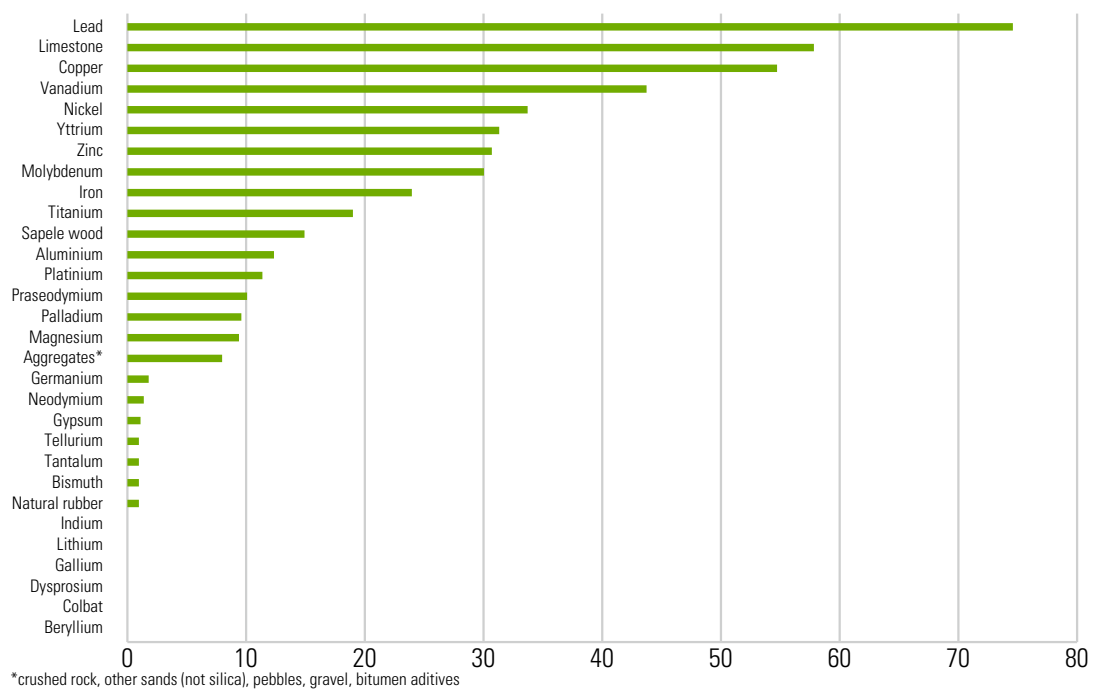
Raw materials are essential for the functioning of the EU's economy. A variety of industrial sectors depend on the secure supply of raw materials, typically in a diversified mix of domestic extraction, recycling and imports. Figure 2 2 represents the fraction of EU needs that is covered by domestic extraction or by processing. The fraction of EU self-sufficiency for extraction is highest for some common metals and minerals (limestone, copper, iron) and two Critical Raw Materials (lithium and fluorspar), but reaches over 50% only for limestone and copper and is at 0% for a range of Critical Raw Materials. The fraction of EU self-sufficiency for processing is at at least 50% for a few common metals and Critical Raw Materials, but again is at or near zero for a range of other Critical Raw Materials.

FIGURE 2.2. EU-SELF-SUFFICIENCY FOR RAW MATERIALS (EXTRACTION AND PROCESSING) IN 2018 IN %



In a world of increasing demand for raw materials, the use of secondary raw materials can help to achieve the circular economy, improve the EU's security of supply, reduce the extraction pressure on natural resources - and therefore, reduce - related pressures on the environment. The indicator summarised in Figure 2 3 refers to the fraction of the demand of EU-based factories that is covered by recycled materials. It does not cover the entirety of demand for the raw material in the EU (since the material can be integrated into a product produced elsewhere and then imported to the EU "as part- of that product). As visible in Figure 2 3, the contribution of recycled materials to raw material demand varies significantly from one material to the other in the EU, with Lead, Limestone and Copper's recycled material contribution to demand reaching above 50%, whereas this proportion reaches less than 10% for over half of the materials represented in this Figure and is below 1% for a range of Critical Raw Materials. These trends, which align with those depicted in Figure 2 1, highlight a high potential for further increasing the contribution of recycling materials to overall demand.

FIGURE 2.3. CONTRIBUTION OF RECYCLED MATERIALS TO RAW MATERIALS DEMAND IN 2016 IN %



Trends in the generation of municipal waste per capita indicator, which is used to monitor trends towards a circular economy regarding 'production and consumption', have stabilized at EU27 level over the last decade, with however a slight increase observed since 2013 (see Figure 2 4). The recycling rate of municipal waste, which gives an indication of how waste from final consumers is used as a resource in the circular economy,⁴ has improved across the EU27, from 27.3% in 2000 to 47.47.7% in 2019 (Figure 2 5). However, this rising trend has stalled in recent years, with very little improvement observed between 2016 and 2019 (+1.2%). Statistics therefore indicate that – although municipal waste is being increasingly recycled – overall production and consumption is not declining (yet).

4 This indicator does not include the industrial waste (generated during the production process), nor the demolition waste of buildings, which represent considerably larger volumes.

FIGURE 2.4. MUNICIPAL WASTE GENERATION, EU27, 2000-2019 (IN KILOGRAMS PER CAPITA). SOURCE: EUROSTAT.

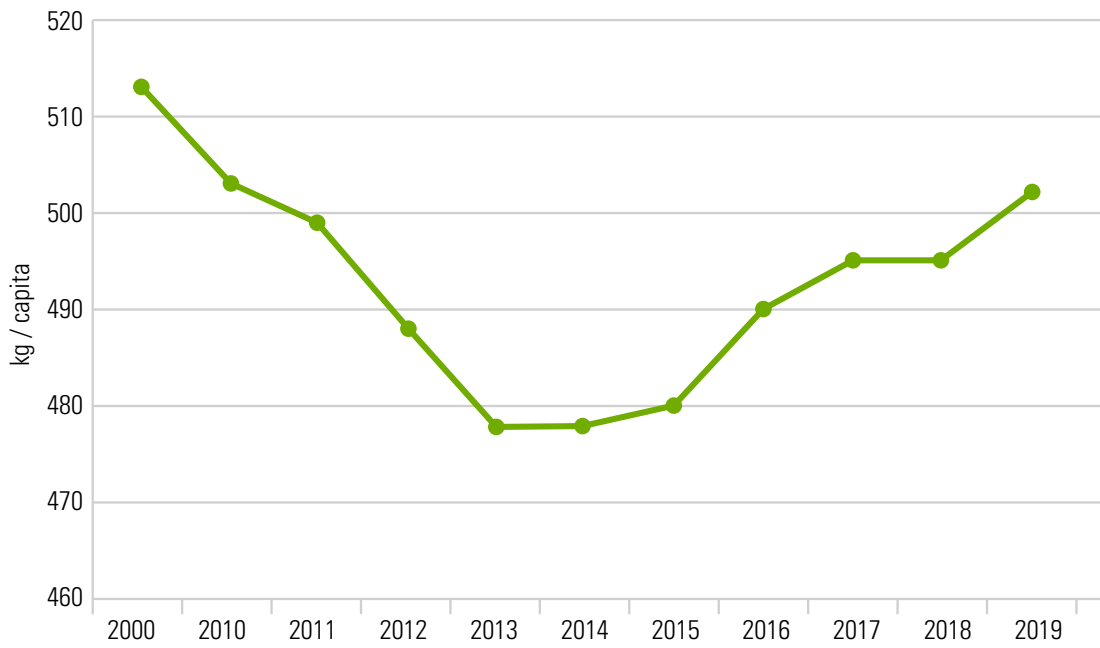
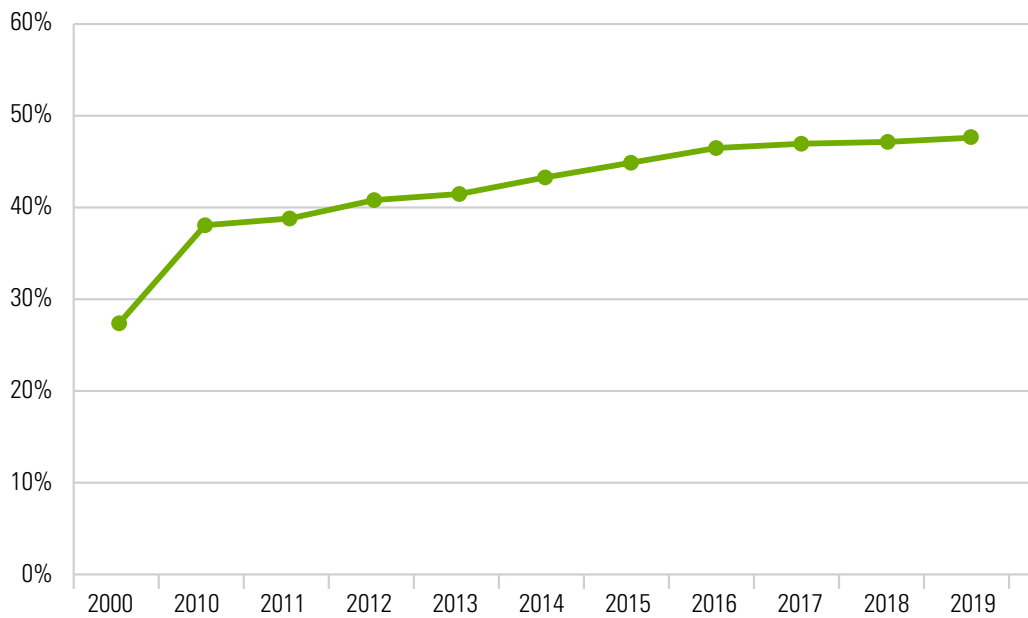


FIGURE 2.5. RECYCLING RATE OF MUNICIPAL WASTE, EU27, 2000-2019 (IN %). SOURCE: EUROSTAT.



2.2.2. Employment in circular economy sectors

Eurostat, the statistical office of the European Union, tracks the number of people employed in two major circular economy-related sectors: the recycling sector, and repair and reuse.⁵ According to latest available statistics, the number of persons employed in these circular economy sectors is slowly growing across the EU, from 3.33 million in 2011 to 3.55 million in 2018. However, these changes remain modest at the scale of total EU employment, with the share of person employed in circular economy sectors remaining at 1.7% in this timeframe. This picture is broadly consistent across EU Member States, with a minimum of 1.13% in Belgium and a maximum of 2.72% in Lithuania as of 2018.⁶ It is noteworthy that this data does not include certain CE-related sectors (e.g. sustainable product design, jobs in the sharing economy, etc.).

2.3. RELEVANCE

2.3.1. Importance of Circular Economy for the world

A widely used framework to understand the sustainability of human activities is the Planetary Boundaries framework devised by Rockström et al. (2009), which establishes thresholds delimitating the safe operating space for humanity within the Earth's carrying capacity. Recently, Sala et al. (2019) used this framework to assess the impacts of the per capita consumer footprint of EU citizens. It found that the bulk of the lifecycle impact of products occurs during manufacture, rather than its use, and that per capita consumption (encompassing the whole lifecycle impacts) exceeds the safe operating space of the planetary boundaries in several impact categories (also visible in Figure 2.6), namely:

1. climate change (high risk);
2. resource use - fossil fuels (high risk);
3. resource use - minerals and metals (zone of uncertainty, i.e. between safe operating space and high risk);
4. freshwater eutrophication (zone of uncertainty);
5. human toxicity – cancer (zone of uncertainty);
6. land use (high risk);
7. particulate matter (high risk).

Although uncertainties remain as to the exact position of the safe boundaries beyond which the Earth's carrying capacity would be compromised, comparing the current level of EU consumption with the boundaries leaves no doubt as to the existence of a gap between production and consumption patterns on the one hand, and sustainable development on the other.

Zooming in on climate change, there is a significant potential for reducing greenhouse gas (GHG) emissions by transitioning towards a more circular economy, notably via making material flows more efficient and maintaining the utility and value of materials and products for as long as possible. In effect, changes in each aspects of the circular economy mentioned in section 2.1 can lead to GHG emission reductions, from extraction to production and consumption/disposal of products.

A 2018 literature review⁷ showed that circular action (excluding energy) can make GHG emission cuts to several sectors and throughout the different lifecycle stages of products in Europe. Other studies that investigated the impacts of circularity on GHG emission reduction⁸ estimated the overall GHG potential to be around 80-150 Mtons of CO₂ eq. per year by 2030 in Europe, amounting to around 2 to 4% of the GHG baseline emissions by 2030 in the EU Reference Scenario. By 2050, the GHG abatement potential was estimated to rise to around 300-550 Mtons of CO₂ eq. per year in Europe, amounting to around 10-18% of the GHG baseline emissions by 2050 in the EU Reference Scenario.

5 For the full list of the sub-sectors included in this indicator, see here.

6 Eurostat (2021) Private investments, jobs and gross value added related to circular economy sectors [cei_cie010].

7 Willeghems, G. and Bachus, K. (2018) Employment impact of the transition to a circular economy: literature study.

8 Trinomics (2018) Quantifying the benefits of circular economy actions on the decarbonization of EU economy.

These findings point to the necessity to move towards a more circular economy in order to reduce the various negative impacts of current production and consumption patterns, and notably to reduce significantly the contribution of the EU industry to its total GHG emissions. As elaborated upon further down in the report, although circularity is still a niche activity within the EU industrial and business landscape, many companies see the transition towards more circularity as an opportunity to strengthen their competitive position, provided that a supportive regulatory framework is in place. Nonetheless, the challenges to scale up CE practices are more pronounced in developing countries, where there are varying degrees of institutional capacity to implement CE strategies, an often undeveloped and fragmented private sector, and an active informal economy beyond the reach of market interventions (Chatham House, 2019). In the EU, these problems are less prevalent and – as explained in the section below – the concept has gained prominence in EU policy in recent years.

2.3.2. Importance of Circular Economy in EU policy-making

The transition to a circular economy is a central component of the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy.

The **2015 Circular Economy Action Plan** (COM(2015) 614 final) set the stage for EU CE policy, by laying out preparatory action for further legislative ambitions down the line. This first plan included the following elements:

- Requirements on products: durability, repairability, recyclability;
- Extended Producer Responsibility at end of life;
- Guidance on and promotion of industrial symbiosis;
- Research on premature obsolescence;
- Circular Economy criteria in Green Public Procurement;
- More ambitious recycling targets for municipal waste;
- Quality standards for secondary raw materials;
- Reflection on the handling of legacy hazardous substances in products being recycled;
- Ban of some single use plastic items;
- Food waste, Critical Raw Materials, construction and demolition waste, bio based materials;
- Research & Innovation.

More recently, the **European Green Deal** (EGD) (COM(2019) 640 final), which constitutes the overarching EU sustainability strategy, has set “mobilising industry for a clean and circular economy” as one of the main pillars, clearly putting CE as one of the main priorities for promoting the dual aims of prosperity and sustainability across the EU. The EGD committed to the publication of a second **Circular Economy Action Plan**, which was published in 2020 (COM/2020/98 final). This plan includes much more concrete set of actions, which increase the level of ambition compared to the 2015 Plan and which will lead to changes with impacts for both companies and workers. The main elements of the new Plan are:

- A Sustainable Product Initiative with a broad scope encompassing eco-design, product passports, the right to repair, mandatory recycled material content in products, and support for circular business models;
- Mandatory Green Public Procurement criteria;
- Circularity criteria in the revision of the Industrial Emissions Directive;
- A prioritization of ICT, batteries, packaging, plastics, textiles, construction, food, water, and nutrients;
- Higher targets for recycling of municipal waste;
- Restrictions to extra EU export of waste.

In addition to these cross-sectoral policy initiatives, the European Commission has announced in this Circular Economy Action Plan of 2020 several sector-specific actions:

- **A Circular Electronics Initiative**, whereby ICT will be a priority sector for the implementation of advanced ecodesign rules and take-back schemes will be explored;

- A proposal for a **Batteries Regulation**⁹ setting up requirements on recyclability and recycled content, on lifetime and on a digital product passport;
- A revision of the Directive on **Packaging and Packaging Waste** will aim at reducing (over)packaging and packaging waste, driving design for re-use and recyclability of packaging, and considering reducing the complexity of packaging materials;
- A strategy aiming at reducing the presence of **micro-plastics** in the environment and at boosting the usage of sustainably-sourced biobased plastics;
- A **EU Strategy for Textiles**, whereby textiles will be a priority sector for the implementation of advanced ecodesign rules and with incentives and support to product-as-service models, circular materials and production processes;
- A **Strategy for a Sustainable Built Environment**, with possible introduction of recycled content requirements for certain construction products, digital logbooks for buildings and life cycle assessment in public procurement.

Significant changes for companies and workers are therefore expected to stem from the new Circular Economy Action Plan and other related European Green Deal initiatives, with the Sustainable Product Initiative being the cornerstone of these efforts. These policies are susceptible to generate deep transformations in the manufacturing value chains, including in the sourcing of materials, retail and post-use phases of the value chain. The transformations are likely to be even faster and deeper in the sectors targeted for specific action.

2.4. CIRCULAR ECONOMY WITHIN THE JOINT WORK PROGRAMME OF THE EU SOCIAL PARTNERS

Circular Economy is one of the six priorities laid out in the [European social partners work programme 2019-2021](#). The work programme recognizes the necessity of moving towards a circular economy to decarbonize the European economy, as well as to ensure EU's prosperity in a world where natural resources become increasingly scarce. Acknowledging that this transition will lead to significant changes – including in terms of technology used at work and business models – but that its consequences on the labour market are insufficiently understood, the work programme committed to organizing a joint research project on this topic. This report is the main output of this joint project.

⁹ Proposal for a Regulation concerning batteries and waste batteries, COM(2020) 798 final <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0798>

3. THE ANTICIPATED IMPACTS OF THE TRANSITION TO A CIRCULAR ECONOMY

This chapter describes the results of this study regarding the impacts of a transition to a Circular Economy on a set of parameters that are relevant for Social Partners, at the scale of the EU:

- > Employment (§ 3.1);
- > Qualifications and skills (§ 3.2);
- > Competitive position of companies (§ 3.3);
- > Organisation and forms of work and types of contract (§ 3.4);
- > Health & safety at work (§ 3.5).

It also identifies the sectors and qualifications most likely to be affected by this transition (§ 3.6), and concludes with a zoom on a selection of Member States, i.e. those listed in Table 1 2 and those having participated in the workshops (§ 3.7).

3.1. EMPLOYMENT

Some sectors and occupations are expected to grow their workforce as the EU economy transitions towards a circular economy, whereas others are expected to evolve in the opposite direction. The main findings gathered on this topic are summarized in Textbox 3 1 below.

TEXTBOX 3.1. MAIN CHANGES EXPECTED IN TERMS OF EMPLOYMENT VOLUME AS THE EU TRANSITIONS TOWARDS A MORE CIRCULAR ECONOMY

Overall, a small positive change in employment volume is expected at EU27 level as well as in most EU Member States. The following sectors are expected to benefit the most:

- > waste management;
- > re-manufacturing (i.e. sectors capitalizing on the processing of secondary materials);
- > services sector (including reuse and repair).

The following sectors are expected to experience the largest negative impact:

- > extractive industries;
- > manufacturing of primary raw materials;
- > manufacturing of some durable goods (e.g. the automotive industry).

Changes in employment volume depend on many factors, for instance policy, technological innovation, and the capacity of sectors to adapt and capitalize on new opportunities. Hence, some uncertainty or disagreement on expected employment volume impacts were noted for the following sectors: apparel/textiles, construction, and wholesale and retail trade.

3.1.1. Creation of new jobs

General

A number of studies have attempted to predict the potential for job creation of the CE transition. Their reliance on different methodologies and assumptions make comparison difficult. Nevertheless, we can observe the general consensus that both within countries and in Europe as a whole, circularity will create jobs. These new jobs are expected because the CE is labour and technologically intensive (Circle Economy, 2020). At the firm level, circularity could lead to increased product demand – with increased demand leading to employment – and to a need for more qualified or specialized employees (Horbach and Rammer, 2019). The findings from the survey conducted within the scope of this

analysis align with the literature as almost a third of respondents expected a neutral effect on employment volume, followed by a somewhat positive effect, a very positive effect, or a somewhat negative effect.

A recent study estimates that all current CE activities will create more than 1 million new jobs across the former EU-28 by 2030, and with further advancements in the CE even up to 3 million jobs could be achieved by then. However, these jobs are likely to be created in countries in which waste sector employment is already strong, namely Germany, the UK, Italy, France and Spain, and with half of these new jobs expected to be created in Germany and the UK alone (Weghmann, 2017). At the country level, some estimates predict that increased circularity could create 100,000 jobs in Sweden, 75,000 jobs in Finland, 500,000 jobs in France, 400,000 jobs in Spain, 150,000 jobs in Czech Republic, and 200,000 jobs in the Netherlands (Wijkman and Skånberg, 2015, 2016). A different study estimated that 54,000 jobs could be created in the Netherlands (Bastein et al., 2013), highlighting the variability of such predictions. Zooming in on the firm level, an analysis of German survey data covering 2014 to 2016 found that CE innovative firms have a better financial turnover and show a positive employment development (Horbach and Rammer, 2019).

Sector-specific

We observe a consensus across the literature that some specific sectors will especially benefit from the CE transition in terms of job growth. In its calculation of the top seven sectors expected to benefit the most from the transition worldwide, the ILO (2018) mentions re-processing activities¹⁰, trade and repair activities¹¹, the production of electricity by solar photovoltaics, and research and development (R&D). After conducting a literature review, Willeghems and Bachus (2018) argue that repair, maintenance and recycling activities have the potential to create jobs, as well as sectors capitalizing on reuse activities (i.e. mainly repurpose, refurbish and remanufacture). Similarly, two other studies point to the repair and recycling/waste sectors as those expected to benefit the most from the transition (Weghmann, 2017; Cambridge Econometrics, Trinomics and ICF, 2018). These results generally align with data gathered via stakeholder consultations (both survey and interviews).

Worldwide, employment in the **waste management sector** is expected to grow by around 45 million jobs by 2030 (ILO, 2018). Past estimates at the European level put the job gains in the recycling industry at 611 per million of inhabitants between 2000 and 2007, which amounts to a 45% increase compared to 2000 (Fischer et al., 2011). This potential for job creation in the waste and recycling sector is due to increased recycling, reverse logistics and secondary markets (Ellen MacArthur Foundation, SUN and McKinsey Center for Business and Environment, 2015). These findings align with the opinion of an EU trade union and from survey respondents, who saw waste collection, treatment and disposal activities and materials recovery activities as some of the sectors expected to be most positively impacted by the CE transition. Partly linked to waste treatment, survey respondents also saw water supply, sewerage, waste management and remediation activities as sectors expected to be positively impacted in terms of employment volume. An interviewee from Circle Economy however noted that uncertainty surrounds global waste markets, and whether waste will continue to be shipped between continents. With the EU Waste Shipment Regulation currently being under review, it is expected that the EC will aim for less waste being shipped overseas, which would positively affect the sector in the EU in terms of employment volume.

The ILO estimates are even higher for the job-creating potential of **repair services**, with around 50 million additional jobs expected worldwide by 2030 (ILO, 2018). This is in-line with findings from the survey and from the opinions of an interviewee from an EU trade union. These will be driven by measures aiming to increase product lifetimes, leading to more maintenance and repair activities (Bastein et al., 2013). An interviewee from an NGO however pointed that the impact of automatization and eco-design - which would make repair and maintenance easier and more automatable – is not yet known; therefore, there is a certain level of uncertainty on whether the sector could be less labour intensive.

¹⁰ Reprocessing of secondary steel into new steel; Reprocessing of secondary wood material into new wood material

¹¹ Retail trade (except for motor vehicles and motorcycles); repair of personal and household goods; Wholesale trade and commission trade, except of motor vehicles and motorcycles; Sale, maintenance, repair of motor vehicles, motor vehicles parts, motorcycles, motor cycles parts and accessories.

For reuse activities, **re-manufacturing** is expected to create many jobs, with reprocessing of secondary steel and wood material alone set to create 30.8 million jobs worldwide by 2030 (ILO, 2018). This positive trend was confirmed by Finnish government employee interviewed. Survey respondents saw manufacturing (not necessarily re-manufacturing) as one of the sector expected to be most positively impacted by the CE transition, and more specifically mentioned the manufacture of computer, electronic and optical products and the manufacture of electrical equipment. However, they also expected some manufacturing sub-sectors to lose jobs (see below).

The general **services sector**, which will capitalize on reuse and repair (e.g. collaborative economy platforms), is predicted to grow due to a rebound effect driven by increased consumer spending and increased demand for technology platform providers and R&D (Cambridge Econometrics, Trinomics and ICF, 2018). An NGO employee interviewed noted that very few studies exist regarding the labour-intensity of leasing, renting and sharing compared to traditional retail, and therefore it is currently uncertain how many jobs can be transferred from traditional retail towards in shops towards service centres. It is noteworthy that – although declines in retail jobs seem probable as consumers buy less new products - whether significant losses will occur in retail was debated by some stakeholders (see below).

In durable goods, and more specifically **apparel/textiles**, an interviewee from an industry association in this field explained that if properly managed, the CE transition could have a positive impact on employment volume (e.g. new jobs linked to recycled fibres). The transformation of the value chain was not seen as problematic, specifically for manufacturers based in the EU, if consumers shift from buying a lot of cheap products to less more expensive ones, as long as the industry anticipates the changes needed to effectively capitalise on shifting demands (this last point relates to competitive position, i.e. section 3.3). A Finnish government employee interviewed also foresaw positive effects in the textiles sector in the Finnish context, due to a re-localisation of activities currently performed abroad.

In the **energy sector**, an additional 14.7 million jobs worldwide are expected by 2030 due to the growth of the solar energy sector (ILO, 2018). More broadly, Cambridge Econometrics, Trinomics and ICF (2018) expect a positive employment effect for utilities (gas, electricity and water), with knock-on effect on alternative materials and energy sources.

One point of divergence is however observed about the **construction sector** between the literature on the one hand, and between inputs from stakeholder consultations on the other. Whereas previous studies have pointed to potential negative impacts on employment volume in the sector due to increased circularity, survey respondents have placed construction as one of the sectors expected to be most positively impacted, and interviewees from a government agency and from a construction trade union foresaw a rather positive impact on the sector. The trade union interviewee argued that innovative sectors such as building prefabrication, wood-based construction materials, insulation, renewable energy/energy efficiency, and intelligent tools (robotics, modelling) will benefit the most. In terms of geographic areas, the interviewee pointed to opportunities in central and eastern European countries as buildings come from Soviet era (i.e. they tend to be older, with steel structures, and not energy efficient), especially in the context of the EU Renovation Wave, and to opportunities in rural areas as country buildings require more renovation.

Occupations and qualification levels

Survey respondents expected the following professions to be positively impacted in terms of employment volume, and again broadly align with evidence gathered via other means:

- **Technicians and associate professionals:** Job gains for technicians were mentioned in the construction sector during the interview from the construction trade union (e.g. installation of heating/cooling systems);
- **Professionals, and more specifically science and Engineering Professionals and Science and Engineering Associate Professionals:** Occupations with science and engineering background are linked to product design (see below) and to the development of manufacturing and processing techniques (including re-manufacturing) which were discussed as rising areas for CE in some interviews conducted;
- **Skilled agricultural, forestry and fishery workers:** Although not specifically mentioned in the interviews (notwithstanding a brief mention of the growing use of Wood Construction Products) as these sectors were not the primary focus of the analysis, one reason for their mention by survey respondents could be

the rising priority status ascribed to the bioeconomy,¹² as visible in the updated [EU Bioeconomy Strategy](#) and Action Plan, the [Farm to Fork Strategy](#) and the European Green Deal's focus on sustainable agriculture. The bioeconomy substitutes fossil carbon by bio-based carbon from biomass from agriculture, forestry and marine environments, and as such is complementary to circular economy;¹³

- **Craft and related trades workers:** These will partly stem from an increase in repair activities. Related occupations in the construction sector are also expected to benefit, including in the context of renovation and building prefabrication;
- **Plant and machine operators, and assemblers:** A shift towards more technology-intensive/mechanised work is anticipated, including in waste management (collection and recycling), aluminium production (including to incorporate recycled content), and re-manufacturing.

With regards to impacts on qualification levels, survey respondents expected that mid-level qualifications will benefit more of a transition to CE than the extremes, with Bachelors' or equivalent expected to benefit the most, followed by short-term tertiary education.

3.1.2. Destruction of existing jobs

Sector-specific

Conversely, other sectors are likely to experience a decline in employment. Projections from the ILO (2018) estimate that, out of the seven sectors expected to experience the greatest job losses worldwide by 2030, three are in the manufacture of raw materials¹⁴ and four are in the mining sector¹⁵. This is in line with a study from Willeghems and Bachus (2018), which points at the raw material sector as one of the two sectors most susceptible to job loss during the CE transition due to increasing prices leading to decreasing demand. A modelling study conducted by Cambridge Econometrics, Trinomics and ICF (2018) at the European level also states that sectors which extract and process raw materials are likely to be negatively affected, a phenomenon already witnessed by a Polish participant in Workshop 3. However, they stress that those have been in decline for some time and represent – for the majority of cases – a small proportion of employment. The social concern here lies in the geographic concentration of these jobs: for the region where the mine is located (sometimes a remote, badly connected region), the disappearing of the local extractive industry has systemic knock-on effects on the rest of the local economy and employment. In alignment with those predictions, survey respondents identified mining and quarrying and raw material manufacturing (specifically of paper and paper products, coke and refined petroleum products, rubber and plastic products, and basic metals) as susceptible to be most negatively impacted in terms of employment volume. Interviewees from an NGO and a primary raw materials company also noted that fossil and extractive industries will face decreases in employment volumes, and the latter stressed that these negative impacts would especially be felt outside of the EU.

Insights from an interview with an employee from a primary raw material company nuance literature and survey findings on expected negative employment effects in the **raw materials sector**, in the context of the **chemicals industry**. The interviewee noted that in general, CE activities such as recycling and resource efficiency will indeed decrease employment volume in some companies, but also present enormous opportunities for the chemicals industry. From the interview, it transpired that such opportunities are conditional on companies' abilities to anticipate changes and adapt accordingly (e.g. new recycling technologies to be located within the EU, although the timescale is yet unknown). An interviewee from another company in this field similarly argued that although losses would occur as an increase in aluminium recycling would lead to less work for smelters and more work for re-melting (which is

12 The bioeconomy is defined by the European Commission as "the sustainable production of renewable resources from land, fisheries and aquaculture environments and their conversion into food, feed, fiber bio-based products and bio-energy as well as the related public goods"

13 For more information on the links between the circular economy and the bioeconomy, see a 2018 EEA report on the topic available here: <https://www.eea.europa.eu/publications/circular-economy-and-bioeconomy>

14 Manufacture of basic iron and steel and of ferro-alloys and first products thereof; Manufacture of wood and of products of wood and cork, except furniture and manufacture of articles of straw and plaiting materials; and Manufacture of glass and glass products

15 Mining of copper ores and concentrates; Mining of iron ores; Mining of coal and lignite and peat extraction; and Mining of nickel ores and concentrates

less labour-intensive than smelting), planning the transition could involve changing activities in some smelting companies located in rural areas, and therefore could offset parts of the negative impacts. These examples highlight that companies in manufacturing of primary raw material could switch and/or develop activities related to the sorting, purification and manufacture of secondary raw materials to adapt to the transition.

Instead, Cambridge Econometrics, Trinomics and ICF (2018) point to more important job losses in the construction sector, which is expected to fall due to productivity gains resulting from new building techniques, with a knock-on effect on forestry (although the scope of the study excludes energy efficiency improvement to existing properties which could compensate this loss). As aforementioned, whether the CE transition will negatively affect the construction sector as a whole remains debated. Nonetheless, an interviewee from a construction sector trade union acknowledged that some losses could be incurred in the sub-sectors focusing on the production of mineral-based building materials (concrete, steel, bricks and aluminium), and more generally involved in conventional ways of building.

Other sectors that could lose out include main **manufacturing** sectors producing durable goods such as electronics (with a knock-on effect on plastics), machinery, cars and accommodation (see the example of Renault in section 4.2), as well as agriculture and food manufacturing (with a knock-on effect on chemicals) (Cambridge Econometrics, Trinomics and ICF 2018). The manufacturing sector will face changes due to the shift from the use of primary to secondary raw materials, changes in product design (longer-life, reparability, etc.), and shifts in what people consume (e.g. less demand expected for some products). Generally speaking, a Finnish government agency employee explained that losses are expected in the production part of the life cycle. After reviewing existing literature, Willeghems and Bachus (2018) also point to the manufacturing sector as a sector highly susceptible to job loss due to decreasing demand for new products. In addition to the aforementioned manufacturing sub-sectors linked to raw materials, survey respondents also predicted that transport and storage would face employment losses. An interviewee from an NGO however cautioned that impacts on traditional manufacturing may be less negative in Europe than in other parts of the world as most these operations are outsourced to third countries and that – with CE – it is expected that jobs will be re-shored towards EU (as highlighted above in the case of textiles in Finland). This highlights some opportunities for the manufacturing sector. In addition, it is likely that many of the maintenance, repair and refurbishing / remanufacturing operations will be performed by industrial companies (see the example of Renault in section 4.2), so that the job balance in manufacturing companies may be more favourable.

Zooming in on the **automotive industry**, an interviewee from a durable goods trade union explained that job losses are expected as a result of CE, and more specifically due to an increase in durability of cars and an increase in rental and sharing practices. While increased durability can currently incur costs higher than the purchase of a new product, and is therefore not very developed yet, car sharing is expected to reduce sales from 15 to 10 million a year. The industry is especially worried about car sharing as cars are produced within the EU, unlike many other domestic appliances, and could therefore have very negative impacts for EU employment. In addition, the shift to electric vehicles (EVs) would also lead to a net decline in jobs as electric car manufacturing is less labour intensive than traditional car manufacturing using Internal Combustion Engines and as batteries are currently imported from extra-EU sources. Some opportunities were nonetheless identified for the sector, namely a further relocation of dismantling and recycling activities within the EU, and an increased focus on 100% recyclable batteries manufacturing (see below in competitive position), although consumer acceptance for EV's remains low (due to high purchasing price, limited km range, and lack of charging stations in certain locations).

Wholesale and retail trade was mentioned by survey respondents as one of the sectors expected to face the most significant job losses as a result of the CE transition. Similarly, in the Finnish context, the government employee interviewed also expects job losses in retail. These losses would be due to the reduction in the number of durable goods being sold. These could be compensated by higher employment in maintenance or repair services and in a shift of this industry towards secondhand markets, but the issue remains whether these new activities will be performed by traditional retail companies or by others in the service or manufacturing sector. Conversely, an interviewee from a retail industry association did not expect major negative impacts and argued instead that the sector will innovate and adapt to shifting consumer demand. The interviewees from this organisation also argued that not all consumers will want to buy circular products, as price remains the main driver of purchasing decision.

Occupations and qualification levels

Survey respondents expected elementary occupations to be negatively impacted, in line with findings on positive impacts which focused on more technical/science-based occupations. Low qualifications levels were seen as those most likely to be negatively impacted in terms of employment volume, with primary education expected to be worst hit, followed by lower secondary education. These results align with the findings of this study on the need to educate students and re-skill workforce to match higher skill demand for the CE transition (see section 3.2).

3.1.3. Net change in the number of jobs

Generally speaking, existing literature agrees that CE activity uptake will have a net small, but positive effect on employment (Chateau and Mavroeidi, 2020; Horbach, Rennings and Sommerfeld, 2015; Laubinger, Lanzi and Chateau, 2020; Willeghems and Bachus, 2018). This was confirmed in several interviews (one NGO, two Finnish government employees). However, some authors have expressed caution about making predictions for net employment gains due to the uncertainties surrounding potential losses and gains resulting from automation (Circle Economy, 2020).

Worldwide, the ILO (2018) projects a potential growth of employment of 0.1% by 2030 under its CE scenario, in comparison to business-as-usual, with Europe being close to this global average. Similarly, modelling presented in an OECD Working Paper points to marginal, yet positive, net employment impacts for most countries (Chateau and Mavroeidi, 2020). However, if a fiscal policy package to promote this transition was implemented in OECD countries only, these would face net job losses due to a relative loss of competitiveness (this point is further elaborated upon in section 3.3.3). Comparing results from 15 modelling studies, Laubinger, Lanzi and Chateau (2020) find that most studies agree with this assessment, predicting a small net improvement (usually between 0-2%). At the European level, one analysis predicted a reduction in unemployment of around 250,000 by 2030 under a scenario equal to the current development of the circular economy, and of around 520,000 assuming a transformational expansion of the circular economy (Morgan and Mitchell, 2015). Cambridge Econometrics, Trinomics and ICF (2018) modelled a net increase of approximately 700,000 jobs in the EU-28 by 2030 in their circularity scenario, showing the large potential for a net positive effect on the EU labour market.

Country-level studies attempting to quantify the net effect of circularity on employment generally find positive effects by 2030, including: between 10,000 and 102,000 additional jobs in Britain (Morgan and Mitchell, 2015), 199,000 jobs in Italy, 124,000 in Poland, and 287,000 in Germany (Coats and Benton, 2015). However, gains will not be uniform. A study at the EU-28 level observed projected positive employment effect in all EU countries besides Slovakia and Croatia, where a small negative effect is expected, as well as a very small positive effect in Finland and Hungary (a Finnish government employee interviewed confirmed that changes in employment volume would be very small). The six countries where most growth is expected, as a percentage from the base employment, are Austria, Spain, Malta, Bulgaria, the Netherlands and Sweden. The authors note that this variation reflects the different economic structures and labour intensities of the main CE activities across the EU (Cambridge Econometrics, Trinomics and ICF, 2018). Indeed, the transition will not be identical in European countries, as each faces specific opportunities (Willeghems and Bachus, 2018).

This overall small but positive effect on employment is the net balance between the job gains (§ 3.1.1) and job losses (§ 3.1.2) considered above. As noticed by ILO (2018), the qualification levels and skills of the jobs being created do not match one-to-one with those of the jobs being lost, so that support to the transition of workers and businesses to Circular Economy will be a social priority – to which the project supported by this study brings a contribution.

3.2. QUALIFICATIONS AND SKILLS

TEXTBOX 3.2. MOST PROMINENT SKILLS AND QUALIFICATIONS NEEDED IN THE CIRCULAR ECONOMY TRANSITION

The following **skills have been identified as the most prominent ones needed in the circular economy transition:**

- > Increased need for **social skills**, including collaboration and coordination;
- > Higher requirements on **work on irregular input** (using recycled materials);
- > Need for **skills to produce reliable and good quality products** (in design + manufacturing for longer-life products);
- > Skills to work with a **complex equipment** (especially in the waste management sector - automated sorting + recycling);
- > **Increase in mid-level qualifications.**

Broadly speaking, the CE transition would be facilitated via upskilling and reskilling of the workforce, which should include 'future-proof' skills. As such, it is expected that a number of new skills among the workforce will be required, while some skills will become obsolete. In the course of the research study it has become apparent that in order to achieve a match between the skills and qualifications on the market and the demand, the changes to system must begin with the young generation already during their education years.

3.2.1. Changes in required skills

Generally speaking, the interviews show it is expected that a large share of new skills will be needed for the design of new products (to be durable and repairable), applicable to all sectors, a point which was also made by survey respondents. Secondly, there will also be a need for new skills in the refurbishment sector and a need for new technical and social skills. There will be a need for collaboration and coordination skills. This is further supported by the literature, according to which the importance of cross-cutting competences (e.g. problem solving and communications) is obvious (Cambridge Econometrics, Trinomics and ICF, 2018). Furthermore, the literature states that the CE transition highlights the importance of transversal skills, as jobs will evolve and workers will need to be adaptable. There is also a growing appreciation of 'future-proof' skill-sets which are tailored to flexibility and adaptability, rather than rigidly teaching in accordance with current jobs (Cambridge Econometrics, Trinomics and ICF, 2018). This point was confirmed by survey respondents, who ranked "adapt to change and demonstrate willingness to learn" as the top new skill required. Creativity, social skills, and complex problem solving are all part of this desirable skill-set. Shifting to such re-skilling and aligning the labour force with the future of employment is needed to keep up with the rapidly evolving economic landscape and the CE transition. One point of divergence was observed between literature and survey responses on the topic of managing health and safety, with literature pointing to this skill as important considering changes in processes and the growth of the waste management sector, while survey respondents ranked it lower than other skills listed.

As per the interview with SITRA, among the skills that might become obsolete as a result of the circular economy transition skills needed to work in primary production and skills needed in retail have been mentioned.

In the **waste management** sector, the representatives of a trade union were of the opinion that the needed qualification and skills are context dependent, as variations exist across European countries. Some Member States have infrastructure for waste recycling and valorisation, while others do not. Notably, municipal waste recycling is very varied across EU. This impacts the type of jobs that exist in these countries. The general pattern is that the level of qualification in the waste management sector is likely to increase in the context of a transition to a Circular Economy, because the least qualified jobs (landfilling) will tend to disappear, whereas those requiring more qualifications (repair, re-manufacturing, recycling) should increase. Higher skilled workers will also be needed in waste management to operate the emerging automated sorting machines.

In the **automotive industry**, the representatives from a trade union were of the opinion that mechanical skills will likely be less needed, while IT-skills and soft skills (such as teamwork, self-organisation and problem-solving capacity)

are becoming more and more important. The products will have longer life time and therefore more repair and maintenance work will be needed, with higher qualification. However, electric cars need less repair as they have less parts and are easier to maintain.

In the **retail industry**, represented by an industry association, workers may need to be re-trained, especially in specialized shops as products will change as a result of the circular economy transition; more product knowledge will be required regarding the fabric, the lifetime and the maintenance operations of the garment. In addition new skills will be needed for repair. However, these latter activities may be conducted primarily by others than retailers or wholesalers. We could think of an emergence of new jobs outside of the sector (e.g. repair centres). Lastly, there will be demand for knowledge of technologies for treating garment in a more sustainable and worker-friendly manner.

3.2.2. Changes in education systems

The literature review as well as some of the interviews points out that there is a need to bring the concepts of circular economy into education and training (Circle Economy, 2020). This does not only amount to lifelong learning and re-skilling of the existing workforce. According to an interview with cross-sectoral governmental organisation it is also necessary to integrate the principles of circularity directly into the education of the younger generations; to bring the new required knowledge throughout all ages. A NGO is of a similar opinion and believes that education should focus on more innovative learning, e.g. "challenge-based" learning or "problem solving" based learning. The literature views the integration of circularity into education and training programmes and support from government to enable access to these programmes for everyone as one of the three pillars for a positive transition to circularity for work and workers, alongside good quality jobs and an inclusive labour market (Circle Economy, 2020).

3.3. COMPETITIVE POSITION OF COMPANIES

Protecting employment, education and training must go hand-in-hand with ensuring that companies retain an advantageous competitive position, so that resources are available to preserve and create quality jobs. Textbox 3.3 summarises the main issues with regards to the competitive position of companies during the CE transition.

TEXTBOX 3.3. MAIN ISSUES WITH REGARDS TO THE COMPETITIVE POSITION OF COMPANIES IN THE TRANSITION TO CIRCULAR ECONOMY

The main **benefits** of the transition to Circular Economy relate to **non-cost** competitiveness:

- Better matching with customer expectations and societal trends that move towards more demand for sustainable and high-quality products;
- More circular products (higher durability, repairability, recyclability, etc.);
- Anticipation of regulatory changes which will make certain CE practices mandatory will better position front-runners;
- More circular business models increase the attractiveness of companies to young skilled workers.

Conversely, **costs** are the most **problematic** issue, and more specifically:

- The price of primary raw materials (i.e. extracted from mines) tends to be lower than that of secondary materials (i.e. resulting from recycling operations);
- Ensuring a level playing field so that sustainable companies are not negatively impacted compared to others (both within and outside of the EU);
- Assistance is needed, particularly for SMEs due to sometimes high investment costs for increased circularity and the adoption of new business models.

3.3.1. Benefits of circularity for companies' competitive position

Moving towards a more circular economy will entail the production and consumption of different products and services that are more sustainable, as well as different consumption patterns (e.g. buying less single-use or short-use products). In such a context, companies will need to adapt to retain an advantageous competitive position. In a recent study conducted by Circle Economy (2018b), rethinking business models was identified as one of 7 key elements of the CE, highlighting the importance for companies to anticipate future trends in this respect.

The stakeholders consulted within the scope of this study were generally supportive of Circular Economy (e.g. two employees from primary raw material companies, one from a construction company, one from a trade union confederation, and several workshop participants), and many identified benefits and opportunities in anticipating what circularity will look like in their fields and adapting their business models accordingly. Nonetheless, some stakeholders in Workshop 3 stressed that profitability should not be the sole concern, but should be pursued hand-in-hand with re-skilling and employment preservation.

The following benefits/opportunities were identified by stakeholders:

- **Cost savings via increased efficiency:** both energy and material efficiency can save costs (government employee, primary raw material company, SME);
- **Ensuring resource security:** a steady supply of materials (either raw or secondary/recycled) was seen as a major element to ensure competitive position (industry association), and a more pronounced reliance on secondary materials sourced from the EU could increase reliability in the future (NGO). In addition, basing a company's main energy resource input on renewable energy was deemed important for competitive position as it contributes to reducing the carbon footprint of industries that may still need to rely on primary materials for some time (primary raw material company);
- **Considering that the transition is inevitable, adapting early provides an opportunity to reap more benefits (or to survive altogether):** As observed by an interviewee from the Finnish government, Finnish companies are beginning to understand that the transition is inevitable, and that it is of competitive advantage to be a frontrunner. The interviewee from a primary raw material company also noted that anticipating the changes will likely lead to profits, and another interviewee from a company in the same sector went one step further, arguing that the businesses that will survive are those which become the most sustainable businesses (i.e. lower carbon footprint, lower impact on biodiversity, more recycling of materials). The idea behind this argument is that once CE practices do become requirements set in laws, frontrunners will be better prepared. For example, one French company selling plaster products made from recycled plaster plates from production waste and from construction or demolition sites said they expect to benefit if mandatory recycled contents are included in the revised EU Construction Products Regulation. It is noteworthy, however, that this awareness is not uniform across actors or Member States. In Italy, an employer association explained that many companies see CE as bringing costs (taxes, bureaucracy, etc), and view CE from a rule-based point of view rather than as an opportunity to develop new processes;
- **Capitalising on the market for sustainable and high-quality products:** several interviewees identified a consumer preference for more sustainable products (e.g. certified products, products with recycled content), with the sale of higher value products increasing the competitive position of the companies providing them (one from an NGO, two from primary raw material companies, conclusions from Workshop 1). One of these companies even stated that its "circular" range of products with a high, certified recycled content met a demand higher than production capacity. Producing such products was also said to result in image gains for the company (construction sector company). This presents an opportunity to improve competitive position by tapping into this demand, with some pointing that a shift to quality products would be especially beneficial for EU companies (industry association; trade union confederation, conclusions from Workshop 1). The size of this market for circular products is limited by the willingness to pay higher prices, as discussed in section 3.3.3;
- **Better relationship with public authorities:** a company's circularity was said to improve its relationship to the public authorities, by demonstrating that the company is serious and reliable (construction sector company);

- **Help attracting skilled workers:** a company's circularity was also said to be an advantage to attract new talent, an important consideration in times of low attractiveness of manufacturing to younger generations. Companies that are more circular attract young graduates because these graduates value working for companies contributing to the sustainability transition. An improved recruitment quality results in a long-term gain in competitive advantage (NGO, waste management company, conclusions from Workshop 1).

3.3.2. Sectoral outlook

However, not all sectors will be equally impacted by such a transition in terms of possible competitiveness' gains. According to survey respondents, the sectors that should benefit in terms of competitive position are:

- Manufacturing: Opportunities in manufacturing were also identified during the interviews in the textiles sector and clothing market generally speaking, as the sector could capitalise on activities such as innovative design and manufacturing from recycled content (European Apparel and Textile Confederation; CNA);
- Professional, scientific and technical activities;
- Education;
- Waste collection, treatment and disposal activities; materials recovery;
- Agriculture, forestry and fishing.

Notably, some circular business models which could be implemented in various sectors include: sharing/ product-as-service practices (SITRA; MUD Jeans); those capitalising on digitalisation, especially as repair activities will increasingly be based on IT rather than mechanical skills (trade union); and those based around utilising more recycled materials (three companies in the construction and primary raw material sectors).

Conversely, the following sectors were identified by survey respondents as those that will be most negatively affected in terms of competitive position:

- Mining and quarrying: Companies profiting from fossil fuel extraction can however diversify their activities and try to switch to renewable electricity generation (trade union);
- Manufacturing:
 - Manufacture of wearing apparel: This stands in contrast to the opportunities identified above under the sectors positively impacted;
 - Manufacture of coke and refined petroleum products;
 - Manufacture of rubber and plastic products;
 - Manufacture of basic metals;
 - Manufacture of motor vehicles, trailers and semi-trailers: This point was confirmed by an interviewee from a trade union, who explained that the competitive advantage of the EU car industry is currently based on large, expensive cars with high environmental impact, which could lead to a loss in competitive position as a transition to electric cars occur and as people purchase less cars due to the development of car-sharing models. An additional hurdle is that the idea of providing "mobility services" (i.e. km rather than cars) is not catching very well with traditional car manufacturers and appears only viable in larger cities. There are some opportunities linked to EVs, but to tap into this potential batteries should be manufactured in Europe, rather than continue to be imported from Asia. The interviewee believed that the disruptive changes that the industry will face will negatively affect some players, and hit the smaller ones especially hard;
- Wholesale and retail trade.

3.3.3. Barriers and opportunities to increase competitive position while adapting to circularity

Costs and prices have been the main barriers identified by companies when seeking to become more circular while retaining their competitive position. Interviewees and Workshop 2 participants mentioned that new standards or regulations could lead to increasing costs for companies (trade union confederation, national employer association) and that sustainable products were more expensive to produce. For instance, a trade union interviewee mentioned the important price difference between regular buildings and zero emission buildings, and an interviewee from a clothes rental company acknowledged that engaging in the circularity model puts the company on the top of the market price-wise, with customers left to choose between brand items or environmental responsibility.

Another argument made was that, as long as the **price of primary raw material** is cheaper than that of secondary materials, the competitive position of companies relying on the latter will fail to level off significantly (trade union confederation, primary raw material company, Workshop 2, Workshop 3), as **many consumer remain driven by cost above sustainability** (industry association, Workshop 2). Such concerns highlight that, even though capitalising on the market for sustainable and high-quality products is seen as a benefit (see above § 3.3.1), this market will not dominate as long as it is cheaper to buy less sustainable alternatives. Participants from Workshops 1 and 3 stressed that environmental externalities should be better internalized in prices.

In alignment with the OECD Working Paper findings presented in section 3.1.3, a related concern was that, if CE advances in the EU, its competitive position will be diminished compared to that of companies in third countries which are not subjected to the same level of requirements and can consequently offer similar but less sustainable products for lower prices. Ensuring a **level-playing field** was therefore deemed important (trade union confederation; Workshop 1; Workshop 3).

In addition, due to sometimes **high investment costs**, the concern was expressed that only large companies may be able to reap competitive advantages, and that even in those large companies circular activities may only represent a small fraction of the business (industry association, employer association, waste management company).

Survey respondents were asked to assess how important some business aspects were, in order to ensure the competitive position of companies. The quality of the product/service was, by far, seen as very important by the highest number of survey respondents. An alignment with customers' requirements and the need for reskilling workforce regarding new equipment and tasks were also seen as important (for more on qualifications and skills, see section 3.2).

3.3.4. Supporting competitive position during the transition via policy

After identifying barriers or opportunities, some stakeholders pointed to ways in which public policies could assist companies in retaining a competitive advantage while transitioning away from unsustainable practices. The following aspects were raised:

- **Public Procurement** could contain more environmental clauses (i.e. Green Public Procurement) and could focus on the whole life cycle cost rather than only on current purchase price (employer association, Workshop 2);
- The **Waste Shipment Regulation** should be revised so as to make inter-EU shipments less expensive and administratively burdensome and to restrict exports, and so that recycling opportunities increase within the EU (employer association; trade union, Workshop 3);
- The **Batteries Directive** should mandate that batteries sold within the EU are 100% recyclable (trade union);
- **Assistance should be granted to companies to adopt more circular practices**, and especially to smaller companies which may not have the financial resources for initial investment costs (industry association);
- **Fostering cooperation between companies should be encouraged**, in a way which aligns with competition law. Doing so could reduce the need for government to provide financial assistance (trade union);
- **Ensuring a level-playing field** (trade union confederation), possibly via increased market surveillance within the EU and at customs. This point will become especially relevant once the European Commission begins to implement some measures related to the Sustainable Products Initiative (conclusions from Workshop 1);
- **Internalisation of environmental costs:**
 - Limitations on the current way to use primary raw resources (Workshop 2);
 - Establish taxation on primary raw materials (trade union confederation, Workshop 2).

Interestingly, many of the proposed public policy initiatives were actually already announced in the Circular Economy Action Plan of 2020 introduced in 2.3.2, notably:

- The introduction of mandatory **Green Public Procurement** criteria;
- A revision of the **Waste Shipment Regulation** to restrict extra EU export of waste;

- Batteries are one of the product types prioritized, with the EC announcing a proposal for a **Batteries Regulation** setting up requirements on recyclability and recycled content, on lifetime and on a digital product passport;
- **Support for circular business models** as part of the Sustainable Products Initiative; and
- Another way to boost the market for secondary materials, which is a major concern underlying the stakeholders' policy proposals, is to have a mandatory recycled material content in products, which the EC is currently looking into as part of the Sustainable Products Initiative.

3.4. ORGANISATION AND FORMS OF WORK AND TYPES OF CONTRACT

The most prominent aspect under this section is summarized in Textbox 3.4.

TEXTBOX 3.4. MOST PROBLEMATIC ISSUES WITH REGARDS TO ORGANISATION AND FORMS OF WORK AND TYPES OF CONTRACT

The most prominent finding in relation to organization of work and types of contract is the fact that **change in activity towards circularity can lead to potential change in the applicable collective agreement**. This has been a very prominent concern among stakeholders, mainly national trade unions.

3.4.1. Applicable collective agreements

The most recurring issue with regards to organization and forms of work and types of contract has been raised by national social partners and relates to the **applicable collective agreements** in relation to circular activities. In three interviewed countries, Denmark, Germany and the Netherlands, organization of work and the types of contract are included in the collective bargaining agreement. According to a trade union, currently, the 'traditional sectors' have very well established collective bargaining agreements, however that might not always be the case in the sectors emerging or rising in the wake of the transition to a more Circular Economy. However, a national social partner argued that, in Denmark, the importance ascribed to discussions regarding collective agreements in the context of the circularity transition remains unclear, meaning that the interviewee wondered whether the problem is being sufficiently discussed in relation to the circular economy transition. Furthermore, according to national social partners in the Netherlands, an issue has arisen, as the scope of activities within a given sector is changing due to the circular economy transition and the 'traditional' labour agreements may no longer be applicable¹⁶. Changing the scope of collective labour agreements can be difficult. Consequences are numerous and large, including for pension funds, where the scope of the collective labour agreement does not always have to be the same as the scope of the pension fund¹⁷. All stakeholders raising this issue agreed that a dialogue between employers and employees in relation to this is crucial and **the discussion on the scope of collective labour agreements is part of the process by which social partners should address the transition towards a Circular Economy**.

3.4.2. Work contracts

Work contracts were specifically discussed by interviewees from the **retail** industry perspective. The interviewees expect very little impacts resulting from the circular economy transition. The sector currently offers a lot of part-time contracts but over 88% of its workforce is employed under a permanent contract. No change is expected in terms of forms of work or types of contracts because on a basic level, the business will remain similar. Similarly to the retail sector, the **construction sector** is not expecting circular economy to impact their organization of work.

¹⁶ Practical example: disassembling of a building can become an activity of itself – so that materials can be recovered. This activity would be related to construction but at the same time to waste management – could fall under two different sectors.

¹⁷ For example, the pension fund for the construction sector encompasses more sectors than the collective labour agreement for construction and infrastructure; many small adjacent sectors and collective labour agreements are also affiliated with the construction sector pension fund.

3.5. HEALTH & SAFETY AT WORK

The research identified a number of sectors where changes are expected with regards to health and safety, namely **waste management, manufacturing, repair and maintenance**. The following paragraphs provide supporting evidence for this, where available. However, despite that some sectors might be more problematic than others, aspects on good working conditions should be considered for all sectors.¹⁸ Textbox 3 5 also summarises the issues that stakeholders considered the most important regarding this social aspect:

TEXTBOX 3.5. MOST IMPORTANT ISSUES WITH REGARDS TO HEALTH AND SAFETY

The introduction of automated machinery for precision recycling of waste streams is considered to bring benefits to the health and safety of the related work.

The most **problematic issues with regards to health and safety** were identified in the waste management sector and relate to:

- exposure of hazardous substances present in products; and
- usage of secondary raw materials.

3.5.1. Waste management sector and related work

The desk research conducted has shown that, in most cases, existing studies pay little attention to impacts on health and safety at work (Weghmann, 2017) and if they do, they tend to focus on negative impacts. The few studies that do deal with this topic, focus mainly on the negative aspects, i.e. poor working conditions in the existing waste management sector, with potential implications for health and safety, and the informal employment that exists in some regions and Member States to perform these tasks. One study conducted by Gregson et al. (2016) examined the working conditions in Material Recovery Facilities (MRF) for municipal solid waste in Belgium and the UK. They qualify the work as 'hard' and 'dirty', with workers in the picking cabin often working beyond eight hours a day, with very few breaks, and in a noisy and smelly environment. The same goes for textile recycling plants in the UK, where the work is physically demanding, involves much standing, and is carried out in a smelly and dusty environment. Health effects were observed due to insufficient use of appropriate gear; employees were found to often suffer from allergies and do not use gloves, which results in skin irritation (Weghmann, 2017).

Another recognised issue for workers is **exposure to potentially harmful substances**. This has been recognized by additional stakeholders (Dutch national social partners), pointing out that dangerous materials (present in products including dangerous residues) must be taken out of the circulation, following the requirements under REACH.

Worker's representatives in the waste sector are of the opinion that impacts on health and safety are heavily influenced by the type of occupation and waste material one comes in contact with. Construction and demolition, which is a large part of the sector, leads to **heavy exposure to dust**, waste water and municipal waste contain pathogens and e-waste can include dangerous substances.

The reviewed literature also identifies **informal or less-regulated work related to waste management** as problematic (Circle Economy, 2020). Poorly regulated work results in short-term contracts, precarious working conditions and long working hours. In some cases informal workers represent a large share of the waste management sector (Circle Economy, 2020). These informal workers do not receive a wage and are exposed to greater health and safety risks as they are working without protective clothing. In addition, this work is mostly performed by vulnerable people (e.g. elderly, homeless, refugees, migrants or minority groups) (Weghmann, 2017).

¹⁸ Interviews with stakeholders (scoping interviews)

It should be underlined however that this situation is the current state of play in some regions and Member States and is in no way related to the transition to a more Circular Economy.

According to **management representatives** from the waste sector there is a shift from manual to mechanized and automated work. This is positive in a sense that the 'traditional' harmful aspect of working in the waste sector, physical contamination, has decreased. This trend towards more automated sorting, and thus towards safer work as regards smell and contamination, should develop with the transition to a more Circular Economy, because the requirements for higher-performance sorting will apply to a larger waste stream.

3.5.2. Durable consumer goods

The sector of **durable consumer goods**, represented by a company as well as an industry association, already has good safety standards in place with regards to the production of durable goods. These often serve as minimum standards based on which companies can develop further safety requirements. However, in connection to the section above on waste management, the sector recognizes that the recycling and dismantling of durable goods remains to be an issue.

3.5.3. Retail

With regards to **retail**, its industry association representatives were of the opinion that there are no significant negative impacts expected in this sector. Moving towards circularity can (and in some cases already does) mean finding alternatives to toxic chemicals and other hazardous substances in the production process, which positively impacts the workers at their supply chain. Generally speaking, the retail sector believes it has a good track record of ensuring health and safety. The sector, however, recognizes that the recycling processes require certain safeguards and considers it important that the recycled materials used in the retail sector are safe.

3.6. NATIONAL PERSPECTIVE

The synthesis of the SWOT analyses made by national stakeholders during the three workshops organized within the scope of this study are presented in this section. For further detail on the national contexts and for the full SWOT tables, see Annex 8.1.

3.6.1. Belgium

In the Belgian breakout room session held during Workshop 1, participants identified many strengths and weaknesses, amounting to a somewhat balanced amount, but identified more opportunities than threats. Participants confirmed that recycling is very advanced; however, there is a lack of knowledge about more upstream CE activities such as eco-design, repair, maintenance, etc. CE also remains a niche activity in most companies. These points hint at the fact that circularity could be greatly enhanced in the country. With regards to public policy, some regulations are already in place, but participants noted that the country lacks a long-term vision on CE and that some aspects could be further developed, notably on creating a market for secondary materials and investing in education and training. Opportunities were centred on improving the country's competitive position (by creating a strong market and logistics hub for secondary materials, export technologies, and via image gains) and job gains (via re-localisation of jobs and training). The workforce is qualified and there is good cooperation in research and in industry, which should provide a good basis to build upon in order to pursue these opportunities. Moreover, CE was seen as an opportunity to ensure that every worker is upskilled. Finally, social dialogue was judged to be well-developed, including via sectoral tools and institutions. However, the insufficient involvement of employees representatives (sectoral and company level) was also identified as a threat, suggesting that further progress could be made. The suggestions for potential joint action by social partners focused on training/upskilling and on the facilitation of sectoral-level discussions.

3.6.2. Czechia

In the Czech breakout room session held during Workshop 1, the main problem identified was the lack of existing national plan for circular economy, which the government is hoping to develop soon with the help of a new project being prepared by the OECD on Circular Czechia. As a result, the policies on national as well as regional level are diverging and relevant ministries don't cooperate very well. Social partners and employers have tried to share their

inputs with legislators, but it's hardly reflected. Main strength is that awareness of the circular economy transition is relatively high and social dialogue functions well. There are many opportunities for employers – on advanced technologies, business models or skills as well as for workers – new skills, more flexibility, emphasis on work-life balance. Overall, there is a great opportunity for the Czech economy to transform from the 'cheap labour' type that it is now, but at the same time they are concerned that the lack of evidence creates concern for citizens and workers as to what will actually happen as a result of the transition. The joint actions can mainly be on awareness raising, collaborations, join workshops and cooperation with schools.

3.6.3. Denmark

In the Danish breakout room session held during Workshop 1, a major national strength identified was that workers and employers collaborate well on this question, and try to find common solutions. They have a strong tradition of sharing knowledge between companies, universities etc., which includes sharing good examples. This is needed to facilitate the uptake of Circular Economy. There are good examples of collaboration which can be shared with other countries (e.g. about industrial symbiosis, cooperation in education, development of knowledge of workers at all levels). The Danish labour market and companies both possess the strength to adapt quickly. A weakness is that the legislation surrounding CE is only falling into place now (including a political agreement on uniform sorting of waste across the country, and on municipalities' access to waste), and the absence of this framework has been a weakness. There is also a need to better understand which competences will be needed by workers and by companies. In addition, the working environment can represent a challenge, until the right technology is there. CE represents a great opportunity for growth and for job creation, including opportunities for vulnerable people on the job market. Lack of knowledge and uncertainty are threats. There are also a lot of uncertainties surrounding the implementation of new measures (e.g. bureaucracy, reporting, etc.). There is also a need for EU legislation on CE. Denmark already has a very good social dialogue in place (e.g. on working environment), and wishes to continue along this path and to set a positive example for other countries and share good Danish solutions on social dialogue processes.

3.6.4. Finland

In the Finnish breakout room session held during Workshop 2, participants agreed that there was a great potential for CE in Finland, as huge leaps are yet to be taken and as EU action has created many opportunities. A gain in momentum was observed, with new projects being launched. Opportunities were noted in the fields of service provision, in further developing public policy to reap off some benefits (e.g. public procurement, creating a market for secondary raw materials and increasing self-sufficiency, and incentivising sustainable businesses), and in improving quality of life more generally speaking. Finland has a strong education system and a skilled workforce, including know-how in the ICT sector and industry more broadly speaking. In addition, there is cooperation between the public and private sectors and a broad acceptance of CE by stakeholders, all of which provide a strong basis for the CE transition. Some bottlenecks and potential issues were nonetheless identified, notably in public policy with issues related to current regulations, taxation and subsidies, which sometimes slow down the transition (bureaucratic hurdles, limited development of the market for secondary raw materials, difficulties in public procurement, need to anticipate changes in working conditions). Participants believed public authorities were too passive, and that more barriers should be removed. A need to create local synergies and engage municipalities was also identified. Another bottleneck identified was the need to work further on developing new skills and education in order to prevent job losses. Although the government is quite pro-active (e.g. 70 000 students learned about CE at school last year, and SITRA is actively conducting research in this field), workshop participants believed that the implementation of concrete measures can be challenging and is not done early enough. Suggestions for potential joint action by social partners focused on working on some of the public policy barriers identified (e.g. public procurement, licensing), on training, and on fostering cooperation between employers and employees via joint projects.

3.6.5. France

According to the participants of the French breakout room session held during Workshop 3, France has been working for years to develop and progress on CE by integrating the topic in its regulatory framework. Stakeholders (companies and representatives, consumers, NGOs, etc.) were mobilized to develop this robust legislative framework and associated action. This high-level ambition and stakeholder mobilisation has created movement and has sparked a willingness to move forward. Nonetheless, implementation at regional and local levels is challenging because the framework is insufficiently addressed to these lower levels, and CE is not a well-known topic at these levels yet. Addi-

tional regulatory weaknesses were identified concerning public procurement, insufficient social conditions attached to public aid for businesses, and needs for further consumer transparency. Other strengths are France's very active industrial fabric on the topic of CE, its sector-specific approach to CE-related topics and a general awareness by companies and population; however, knowledge gaps still exist about CE and its effects. Although social dialogue at national- and company- level was identified as a strength, some weaknesses were identified. At national level, dialogue could be fostered e.g. via the National Industry Council (*Conseil national de l'industrie*). At company-level, Social and Economic Committees (*Comités Sociaux et Economiques*) have been given more powers, but they have insufficient means to fulfill their extended mandate (financial, expertise). The idea that staff and their representatives should be trained to have the necessary knowledge to participate in this dialogue was expressed. Issues of commercial secrecy also prevent employees from having all the data on the upstream and downstream value chain. Cost-competitiveness was identified real hurdle to strengthen CE in terms of raw materials, and competitiveness loss as a potential threat. More broadly, the macro-economic situation and paradigm (including lobbying) were also identified as threats. Opportunities were identified for training/skills development, improve regulations, create more jobs that are also of better quality, to improve employers/employee cooperation, and decrease dependence on primary raw materials. Finally, suggestions for action by the social partners focused on further developing social dialogue, education and training, and information-sharing with companies and national social partners.

3.6.6. Germany

In the German breakout room session held during Workshop 2, participants identified two major and intertwined national strengths: the training structure and the cooperation between workers and employers. Cooperation is indeed partly responsible for the high-quality education and training structures, as explained above. Although some participants noted that training processes in place have incorporated sustainability and CE, concerns were also expressed that there is some further alignment work needed, including in companies. CE was seen as providing opportunities to develop new business models, create new jobs, and create environmental benefits (e.g. less hazardous substances, less waste generation). However, a need to improve policies in a way that does not disproportionately negatively impact SMEs and which does not overall result in high costs for businesses was expressed. Suggestions for potential action by Social Partners focused on fostering dialogue on CE amongst stakeholders, public awareness raising, and further promoting cooperation between employers and employees.

3.6.7. Greece

During the Greek breakout room session held during Workshop 3, the main strengths identified related to the structure of the economy and companies (service-oriented, smaller and thus more flexible companies) and to high awareness of the importance of CE amongst the public. CE sectors were deemed insufficiently prepared as poor waste management system which is expensive to improve due to geographic conditions and low levels of automation. The economic situation is also a barrier, with high unemployment and high rates of informal/undeclared work. Dialogue and cooperation was considered inadequate, notably with regards to the implementation of collective agreements, consultation during public decision-making, and tripartite discussion with public authorities more generally speaking. In addition, education, training and re-skilling needs have not been defined nor planned at national level, and the transition more broadly speaking has received insufficient funding. Despite these important barriers, participants noted that the CE transition offers opportunities for business development, innovation, developing a new training curriculum and creating new and better jobs, including in terms of health and safety. Suggestions for potential action by Social Partners focused on extending collective agreements, monitoring, training development and delivery, and high-level representation.

3.6.8. Italy

The inputs from national stakeholders present at Workshop 2 are summarized in Table 3 8below. Overall, there are a number of strengths in Italy; due to their lack of natural resources they've already adopted an efficient use-approach and the government has made it easier due its tax credit system, to increase investments in CE. However, overall there are not many measures to boost CE. The regulatory framework, however, is heavy and complex and it is difficult for SMEs to have access to bank credits. Social partners should play a role in establishing agreements regarding circular economy on all levels of governance as well with business to outline a common path and intervene with policy makers (especially at regional level) from the early stages of defining vocational training courses.

3.6.9. Netherlands

The Dutch stakeholders present estimated that, overall, the country has quite some strengths with regards to Circular Economy transition, such as new target groups of young and/or female workforce or emerging new business models (e.g. product as a service). Nevertheless, circular economy is not too high on the political agenda and as such is not as prominent with regards to finances. Furthermore, in many cases the concept is perceived as recycling or reduction of CO₂ emissions. The transition, however, poses a chance for new, rising start ups, for new new workforce groups and for the establishment of new collective bargaining agreements. The collective bargaining agreements (or their lack of in certain sectors) is also perceived as a threat. With regards to joint actions, social partners believe that they should cooperate more with policy makers.

3.6.10. Poland

Polish stakeholders present at Workshop 2 pointed to a number of strengths. For example, there is a growing awareness regarding circular economy and the Polish workforce has the necessary skills to introduce innovations. However, there is a limited financial support from the government. As such, Poland views external support (e.g. the use of EU funds) as an opportunity. With regards to actions for social partners, they should play a role in education and training of workers.

3.6.11. Slovenia

Due to a low representation of Slovenian stakeholders during Workshop 2, there was no Slovenian break-out session.

3.6.12. Spain

The Spanish stakeholders participating in Workshop 2 argued that there is a need to align national legislation with the EU strategies for circular economy and to create decent jobs. Specifically, significant improvements are needed in relation to waste management. As such, new waste legislation should be put in place. It is important that the transition remains a just transition. Furthermore, the Spanish stakeholders recognized that there is need for social dialogue between employers and employees to ensure that protection of workers is ensured. There is a decent tradition for social dialogues in Spain.

3.6.13. Conclusions from the Member States overviews

The CE transition is at different stages across Member States, whether in terms of the indicators presented in each Member State overview, of the legal framework, or of the preparedness of companies and the workforce. Nevertheless, none of the Member State reviewed in the context of this study was at an advanced stage yet. For instance, stakeholders from Belgium acknowledged that although very advanced in terms of recycling, the country lacked knowledge about upstream activities (e.g. eco-design, repair, maintenance). Similarly, in the Netherlands the concept was deemed to often be reduced to CO₂ emission reduction or recycling. Some stakeholders noted knowledge gaps and uncertainties (in Belgium, Czechia, Denmark, France), but in several Member States awareness by companies and/or the general public was seen as high (Czechia, Finland, France, Greece, Poland, Slovenia).

Diverging views were expressed on the regulatory framework in place in the different countries. In some Member State, workshop stakeholders viewed existing regulation as a strength (Belgium, France, Slovenia). In most, however, stakeholders believed that the national regulatory framework could be improved or was viewed as a weakness, even in countries where regulation was quite advanced comparatively to their EU counterparts (Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Spain).

SMEs were specifically singled out in three national breakout rooms. Some policy barriers were identified in Germany – where the need for policies that do not disproportionately negatively impact SMEs was noted – as well as in Italy where difficulties with accessing bank credits were voiced. On the other hand, in Greece, the small size and flexible structure of companies was seen as a strength.

With regards to social impact on labour, the two following findings were observed:

- Stakeholders from a few countries argued that their national skilled and/or educated workforce was a strength (Belgium, Finland, Germany, Poland), but more viewed education and/or training/re-skilling as

- either a weakness or as an opportunity, implying in both cases that it needs to be further developed (Belgium, Czechia, Denmark, France, Finland, Greece);
- Improving the competitive position of companies (including via the development of new business models) was seen as an opportunity in a few countries (Belgium, Czechia, Greece), as a strength in the Netherlands, and as an issue in France.
 - Stakeholders from several countries discussed job opportunities resulting from CE (Belgium, Czechia, France, Germany, Greece, Netherlands, Poland), with Belgian participants specifically mentioning vulnerable workers and Dutch participants mentioning young people and females. French and Belgian participants also stressed that such opportunities will partly arise from the relocation of some activities within their territories. Concerns were expressed in two breakout sessions regarding the exact impact of the transition on job losses (Czechia) and on the threat of job loss if the updating of skills for employees is insufficient (Finland).
 - Job quality and working conditions were discussed in a smaller number of breakout sessions. In some, increased circularity was seen as an opportunity to create more quality jobs (e.g. via investments in R&D) (France, Netherlands, Greece), while in Czechia concerns were expressed about impacts on job quality. Moreover, some concerns were expressed about work environment, working conditions and/or health and safety (Denmark, Finland, France).

The adequacy and quality of the social dialogue, and cooperation more broadly speaking, seemed to vary across Member States according to workshop participants. Existing social dialogue was viewed as a strength in Denmark, Czechia, Finland, Germany, Belgium, France and Spain. However, in the three latter countries, stakeholders noted that there is still room for progress (e.g. in the involvement of employee representatives, topics addressed, etc.). Issues were also raised in Greece and Slovenia, and the lack of some collective bargaining agreements was perceived as a threat in the Netherlands.

There was some degree of overlap in the suggestions made for EU Social Partners action in the national breakout sessions, notably with regards to:

- Training and upskilling, including via the sharing of good practices;
- Awareness raising to the general public;
- Fostering dialogue and cooperation amongst stakeholders;
- Extend/create collective bargaining agreements where necessary; and
- Work on removing relevant public policy barriers.

4. CASE STUDIES OF FORERUNNERS IN THE TRANSITION TO A CIRCULAR ECONOMY

4.1. CASE STUDY #1 – LCPAPER

LC Paper, an SME from Catalonia focusing on eco-friendly manufacturing of kraft-paper and tissues, has successfully undergone the transition to circular economy. Starting in 1993, they've introduced projects focusing on decreasing energy and material consumption. This transition has not only involved modifications to their products but also replacing traditional production processes. The transition has resulted not only in reduction of energy costs but also logistics and chemical costs. Moreover they manufacture CO₂ neutral products. Textbox 4 1 summarises how the SME addresses the different social aspects of the circular economy transition:



TEXTBOX 4.1. SUMMARY OF LC PAPER'S APPROACH TO DIFFERENT SOCIAL ASPECTS OF CIRCULAR ECONOMY TRANSITION

Employment volume and competitive position: the consumption of raw materials used in the production processes has been reduced. This has an impact at the employment volume at LC Paper itself, in a positive manner. The company has opted to replace plastic packaging with packaging on-site, which increases the workers' activity volume. The company's workers have also been welcoming of the transition. With regards to competitive position, the transition has resulted in some challenges. The market is set up in a certain way and traditional buyers did not understand their new concept. As such, the company had to search for different buyers, which was challenging but worth while.

Qualification and skills: the trajectory of the transition was very long (approx. 5 years) and was done in small steps, which allowed workers to keep up with the changes and learned how to produce in a new, different manner. Their employees were given sufficient time to adjust to the transition and no particular problems arose between employees and management.

4.2. CASE STUDY #2 – RENAULT GROUP

Renault Group is a car manufacturer which was created in 1898 in France, and which now employs 170 000 employees in 39 countries (Renault Group, n.d.). Amongst other CE-related measures,¹⁹ the Group recently announced that it will transform the Flins factory, located in the outskirts of Paris, into a RE factory, making it the 1st factory of the company dedicated to CE. Renault Group defines the initiative as an "industrial and commercial ecosystem", which will be open to start-ups and partnerships (Renault Group, 2020). Changes will be based on four areas of activity: re-trofit (i.e. longer life), re-energy (i.e. developing green energy and batteries recovery), re-start (i.e. innovation about how to favour the Flins factory transition), and re-cycle. Textbox 4 2 summarises how the company addresses the different social aspects of the circular economy transition, and notably the concerns expressed by workers' representatives about the social impacts of this transition at the Flins factory:



TEXTBOX 4.2. SUMMARY OF RENAULT GROUP'S APPROACH TO DIFFERENT SOCIAL ASPECTS OF CIRCULAR ECONOMY TRANSITION

Employment volume and competitive position: In its agreement with workers' representatives, Renault Group guaranteed a minimum threshold of 3,000 employees at the Flins factory by 2030. Management highlights that the start-up of the Factory VO (Used Car Factory) in July 2021, with the capacity to refurbish more than 45,000 second hand vehicles

¹⁹ For a brief overview, see: <https://www.renaultgroup.com/nos-engagements/respect-de-lenvironnement/economie-circulaire/>

per year, demonstrates that this project is solid and will secure employment volume. However, workers' representatives expressed concerns that the transition of the Flins factory will have ripple effects on other sites, forcing e.g. the closure of the Choisy-le-Roi factory dealing with gears, as well as of two hubs in Ile de France dealing with car refurbishing. More broadly speaking, they argued that the CE project in Flins and its environmental objectives may be rejected by workers if these workers do not participate sufficiently in its definition and implementation.

Qualifications and skills: Due to major changes happening in the automotive sector, notably the decline of the internal combustion engine that concerns, only in France, at least 50,000 people, Renault is creating the ReKnow University. This University aims to support the training of the Renault employees impacted by these major changes, towards the professions and skills of the automotive industry of the future. The training will be performed on-site, but also be performed in full cooperation with reputable educational and teaching partners. The creation in 2010 of the Flins Campus, Renault's global training centre located in Flins, is a concrete illustration of this commitment.

Through the Reknow University, the management of Renault aims to support all employees. It will have trained nearly 2,000 people by the end of 2021 and nearly 10,000 more by 2025, i.e. nearly 40% of the workforce concerned by this transformation. Furthermore, gradually the University's activities will be extended to Renault's industrial partners and suppliers.

Workers' representatives stated that although there will be a need for heavy training and associated investment to adapt to the new activities of the factory, they are worried that the company may not make the necessary investments and that many workers may be forgotten in the process.

Social dialogue:

The workers' representatives expressed concerns about potential job losses and insufficiently inclusive training, as well as insufficient dialogue between management and workers' representative in this specific instance, despite the good intention of the companies in terms of CE innovation. During Workshop 3, workers' representatives shared ideas about ways forward to advance environmental sustainability alongside social objectives (job preservation, training and investments in working tools). In their views, important gains could be made if workers' have the opportunity to share these ideas with employers, and if employers explained in greater detail how employment and skills will be affected, and what specific actions they intend to undertake to mitigate negative impacts.

According to management, the Refactory project is the result of the thorough work of Renault's teams and of constructive consultation with the Group's stakeholders, including local authorities and trade unions.

This project to create Europe's first circular economy factory dedicated to mobility in Flins will enable Renault Group to benefit from a rapidly growing source of value while reaffirming its industrial footprint in France.

4.3. CASE STUDY #3 – MUD JEANS

One of the cross-sectoral interviews held was with a representative of a recent start-up MUD Jeans. The company identified itself as a circular denim brand, which aims to incorporate principles of circularity into its business model and show there is an alternative to fast fashion. Established in 2012, it relies, next to traditional business model, on a 'rent and lease' model – where jeans are rented out for a fixed amount per month for a period of one year. After the one year, jeans are returned back to the company; those in good state become part of the 'vintage collection', the rest is recycled. Textbox 4.3 summarises how the start-up addresses the different social aspects of the circular economy transition:



TEXTBOX 4.3. SUMMARY OF MUD JEANS' APPROACH TO DIFFERENT SOCIAL ASPECTS OF CIRCULAR ECONOMY TRANSITION

Employment volume and competitive position: all jobs at MUD Jeans are created around the concept of circular economy, which (price-wise) puts them on the top of the line; prices are comparable with high-level brands. Their customers are in favour of the concept, it reduces 'environmental anxiety' of customers; however their audience is very sustainability-oriented.

Qualifications and skills: the direct MUD Jeans team possesses a set of knowledge covering business models, textile technologies, marketing or sustainable development. The team consists of a young workforce, all with a high interest in sustainability. Given that it is a start-up, a lot of knowledge is gained in the process. Knowledge of new techniques and technologies also takes place in the supply chain; MUD Jeans poses questions on new techniques, which drives suppliers and results in new skills and qualifications.

Health & safety at work: MUD Jeans itself is a tertiary company, which pays very thorough attention to health & safety of workers in their supply chain. First of all, they focus on processes with no toxic chemicals and try to look for alternatives. In order to ensure their partners and suppliers adhere to this, regular audits take place. Secondly, they are phasing out a harmful procedure of sandblasting (the processes thanks to which jeans look 'worn out', but during which workers can inhale the sand particles). Instead, they focus on procedures where workers have as little contact as possible with harmful substances during the processes (use of laser, ozone, dry indigo).

4.4. CASE STUDY #4 - BASF

BASF, a German chemical company, has introduced a pilot project of chemical recycling of plastics using pyrolysis oil (from plastic waste) rather than naphtha (from crude oil). It is not only the concept of plastic recycling that is in line with circular economy, it is also the fact that the same production line can be used to process both input flows (naphtha with an increasing share of pyrolysis oil). As such, the transition is expected to have no negative effects on the labour force, as all skills and collective agreements will be maintained. In addition to that, Textbox 4.4 summarises how the company addresses the different social aspects of the circular economy transition:



TEXTBOX 4.4. SUMMARY OF BASF'S APPROACH TO DIFFERENT SOCIAL ASPECTS OF CIRCULAR ECONOMY TRANSITION

Competitive position: BASF has received some positive trends in relation to their competitive position. They have received concrete interests from customers, which allows them to continue with the pilot project. The pilot has also not been carried out by the company alone, stakeholders from the entire value chain have been involved from the beginning. They start small and when there are clear signs of success, the production will scale up. Overall, chemical recycling is sensible, also from a competitive point of view; it makes sense economically, environmentally and socially.

Qualification and skills, health and safety and organization of work: given that the company is anticipating to continue using its original line of production (with the only difference being the gradual addition of pyrolysis oil to naphtha), BASF is not anticipating any direct impacts on skills, health and safety or the organization of work of their own employees. There is likely, however, to be a negative impact on their naphtha suppliers, their workers might need to be re-skilled for pyrolysis plants.

4.5. CASE STUDY #5 - SAINT GOBAIN

Saint Gobain is a global group which designs, manufactures and distributes materials and solutions (Saint Gobain, n.d.), and its brand Placo specifically manufactures plaster plates. Placo France employs 1,500 people, and consists in 8 quarries and 8 manufacturing sites (for plaster, plaster plates, and plaster tiles). In 2008, internal workshops were set in factories to recycle internal production waste, in order to avoid landfilling. The technology and know-how from this activity evolved into the recycling of external sources of plaster from construction and demolition waste. As of 2020, 170 collection sites are set up across France, and 107 ktonnes of plaster was manufactured in 2019 from recycled materials, amounting to 1/5 of the total available resource available for recycling. The recycled plaster plates by Placo include up to 28% of externally-sourced recycled material. Textbox 4-5 summarises how the company addresses the different social aspects of the circular economy transition.



TEXTBOX 4.5. SUMMARY OF SAINT GOBAIN – PLACO FRANCE'S APPROACH TO DIFFERENT SOCIAL ASPECTS OF CIRCULAR ECONOMY TRANSITION

Employment volume: A complete value chain was created for the recovery of plaster waste from construction and demolition sites, leading to the creation of new external jobs for collection, sorting and dispatching of plaster waste, as well as new internal jobs in the recycling workshops in production sites (mechanical crushing of the plaster, mechanical sorting to remove impurities such as paper, cardboard, silicon, or expanded polystyrene), and in the monitoring of the process.

Competitive position: the representative from the employers interviewed explained that the recycling activity has recently become profitable as the size of the flow has increased, and management expects policy to further support cost-based competitiveness in the future (both EU and FR). Quality-based competitiveness has improved, especially as there is a growing market for certified buildings via quality labels such as LEED or BREEAM, which increasingly require a share of recycled materials. New activities have led to image gains and to improvements in the relationship with public authorities, by proving the seriousness and reliability of the company.

Qualifications and skills: new skills were required for managing the usage of recovered plaster from construction and demolition sites. More specifically, these changes concerned: (1) engineers designing the manufacturing process (i.e. how to manufacture products from a less well controlled material and which contains impurities and how to increase the share of this material in products); (2) operators in the production facility (i.e. greater complexity in driving the machinery with the less-controlled material); (3) managers of internal logistics in the production sites (i.e. how to deal with additional heaps of raw material with specific characteristics such as fermentation risks in cases of rain). In relation to this last point, the workers representative interviewed stressed that there has been no awareness raising targeted at workers to reduce production waste, which unnecessarily adds to the necessary waste derived from production.

Health and safety: One point discussed by both the representatives from the employers and from the workforce was the management of recovered waste prior its recycling, which is stored at the production site. The employer representative explained that there is a feeling amongst workers that the heaps of recovered plaster from construction or demolition sites is "dirty" because it is waste, but that no health and safety hazard was identified (although whether fermentation due to rain may release hazardous fumes such as sulphur is yet to be confirmed). Although acknowledging that no safety issue has been observed so far, the interviewed representative from the workforce listed three additional concerns: (1) waste placed in buildings can present risks (water leaks, rust, disused buildings, etc.), and there are uncertainties as to how to get the waste out of them while respecting the safety rules; (2) workers representatives must call management to ensure that waste placed around buildings is not on pedestrian crossings and to be informed about its exact location so that loading and unloading can be done quickly and safely; (3) the heaps of recovered plaster generate dust, which is potentially hazardous and also creates problems with the local communities around the industrial sites.

Social dialogue: The employers representative noted that recycling and Circular Economy are at the agenda of every meeting of the Work Council ("*Conseil Social et Economique*"), with reports on the activities of the previous year, forecasts for the following year, discusses investment plans, etc., and did not know of any conflict. Conversely, the workers' representative argued that workers and their representatives are insufficiently informed and insufficiently consulted before decisions are made, but pointed that this issue is more general and does not specifically concern recycling.

4.6. CASE STUDY #6 – DER ABFALLWIRTSCHAFTSBETRIEB MÜNCHEN (AWM MUNICH)

The AWM Munich is a public service corporation in waste management which is run by the City of Munich since 1891. It employs over 1,500 employees and undertakes several activities of relevance to circular economy: collection of recyclable material (including organic waste), recycling across 12 recycling centres, production of compost which is subsequently sold (Münchner Erden), activities linked to waste prevention (reuse, repair), and educational activities for children (AWM, n.d.). Textbox 4.6 summarises how the company addresses the different social aspects of the circular economy transition.





TEXTBOX 4.6. SUMMARY OF AWM'S APPROACH TO DIFFERENT SOCIAL ASPECTS OF CIRCULAR ECONOMY TRANSITION

Employment volume:

In 2020 AWM has 1.600 employees. Most of them are collectors of waste and drivers. In the direct field of Circular Economy the company employs about 10 people in its second hand shop "Halle2" and anticipates to enlarge this business stream in the future.

Qualifications and skills:

As the tasks allocated to waste management evolve towards more circular flows, AWM will need more specialists for recovery, reuse and repair. AWM also will need more sale agents for its "Halle 2" second-hand shop.

Competitive position:

AWM has no competitors, because under German law, every citizen must have a contract with a Municipal company as AWM is. AWM collects a waste fee for its services, which is controlled by the City Council.

Organisation and forms of work and types of contract:

There are no impacts yet on the organisation of work. The City of Munich will organise a special department for Circular Economy in the future, which may have consequences on the scope and the nature of the work performed by AWM.

Health and safety:

AWM has observed no impacts of Circular Economy on the health and safety of its employees.

5. CONCLUSIONS FROM THE STUDY

This study aimed to inform the EU Social Partners on the anticipated impacts of the transition to a circular economy on various social aspects via several means, and – based on this analysis - to draw recommendations in relation to possible future Social Dialogue discussions/actions and to policy-makers.

Employment volume is foreseen to be overall slightly increased by the transition to a Circular Economy, but negatively impacted towards the upper part of value chains (extraction and primary production). Opportunities exist via secondary raw material usage (e.g. the BASF case study in section 4.4) or potential for jobs re-localised within the EU in the textiles sector. Some sectors expected to be negatively impacted can nevertheless take actions which may reduce their losses (e.g. the automotive industry, via a developed recyclable batteries market and if fewer cars are exported for recycling). Positive impacts are predicted in the several loops of material flows on which a more circular economy would rest, i.e. activities linked to repair, maintenance, and recycling, in addition to re-manufacture. Overall, while a small net positive effect on employment volume is expected, uncertainties remain, especially linked to technological developments/automation.

Broadly speaking, the sectors expected to benefit in terms of employment volume are also those expected to benefit in terms of competitive position. Although the stakeholders contacted within the scope of this study are generally supportive of the CE transition and see it as an opportunity to re-orient their business/sector towards a more sustainable direction, issues related to prices and costs were identified, alongside ways forward to resolve these costs. However, many of the stakeholders' proposals were actually already announced in the 2020 Circular Economy Action Plan. Many of the barriers identified are therefore expected to significantly subside in the current decade, making being a frontrunner in circularity advan-

tageous for companies across many sectors (for concrete examples on opportunities and challenges linked to competitiveness, see the case studies from LCPaper section 4.1 and MUD Jeans section 4.3). As seen in the case studies and expressed by stakeholder during consultation activities, the circularity of companies must go hand-in-hand with employment sustainability, re-skilling, strong and appropriate collective bargaining, in line with national industrial relations systems, and suitable health and safety safeguards.

Overall, an increase in mid-level qualifications is expected and very few skills are expected to become redundant. The most prominent skills needed – which also centre on the main sectors within a circular economy – are: higher requirements on work on irregular input (i.e. using secondary raw materials), skills to produce reliable and good quality products (in design and manufacturing of longer-life products), and skills to work with a complex equipment (especially in the waste management sector due to automated sorting and recycling). Furthermore, there is a need to bring the concepts of circular economy into education and training. This entails upskilling and re-skilling the workforce as well as integrating the principles of circularity directly into the education of the younger generations, in order to bring the new required knowledge throughout all ages. The case studies have highlighted that re-skilling can be a very significant aspect of the transition within company. This process can be done slowly, giving employees sufficient time to adapt to the changes (see the case study on LCPaper in section 4.1), or can entail more disruptive changes which may be worrying for employees (see the case study on Renault in section 4.2). Conversely, in some companies increased circularity will not lead to important changes in the work performed, as seen in the example of BASF in section 4.4.

The sectors in which changes are expected with regards to health and safety are also those expected to benefit the most from the transition in terms of employment volume, namely waste management, manufacturing, repair and maintenance. From these sectors, waste management is the most prominent one, as workers face the issue of exposure of hazardous substances and handling of hazardous residues in products. The case studies illustrate that companies can be pro-active in this respect, for instance by setting-up a supply chain approach to health and safety with monitoring (see the case study of

THE SECTORS IN WHICH CHANGES ARE EXPECTED WITH REGARDS TO HEALTH AND SAFETY ARE ALSO THOSE EXPECTED TO BENEFIT THE MOST FROM THE TRANSITION IN TERMS OF EMPLOYMENT VOLUME, NAMELY WASTE MANAGEMENT, MANUFACTURING, REPAIR AND MAINTENANCE.



MUD Jeans section 4.3), and that changes can be disruptive for workers, highlighting the need for adequate social dialogue to discuss changes and implications (see the case study of Saint Gobain, section 4.5).

Currently, the 'traditional sectors' have well-established collective bargaining agreements; however, this may not be the case in emerging sectors, where existing collective bargaining agreements might no longer be applicable or may be lacking altogether. This also depends on the national industrial relations systems. Changing the scope of collective labour agreements can be difficult and consequences are numerous and non-trivial, including for pension funds, where the scope of the collective labour agreement does not always have to be the same as the scope of the pension fund. Therefore, a dialogue in relation to this between employers and employees which are parties to the collective agreement is crucial, and the discussion on the scope of collective labour agreements is an important one.

Zooming in on country-level insights, none of the Member States analysed within the scope of this study are very advanced in the circular transition of their economies; however, some differences were observed (e.g. in their regulatory frameworks, education and training systems, economic contexts, etc.), creating some context-specific difficulties and opportunities. Although the legislative context was seen as a strength by some and as a weakness by others, the need for setting or further developing public policies to facilitate the transition and support companies and workers in the process was identified in most countries. A skilled/educated workforce was seen as a strength in some countries, but again it was also identified as in need to be further developed to adapt to shifting demands and needs. While the adequacy and quality of the social dialogue, and cooperation more broadly speaking, seemed to vary across Member States according to workshop participants, training/upskilling, work on removing policy barriers, as well as other actions were mentioned as areas where the social partners could intervene.

6. RECOMMENDATIONS OF EUROPEAN SOCIAL PARTNERS ON THE TRANSITION TO CIRCULAR ECONOMY

This study has shed light on some issues that the Social Partners could contribute to addressing, in order to facilitate the transition towards a more circular economy across the EU while protecting and in some instances even improving employment opportunities, job quantity, job quality, and the competitive position of companies. In this section, we include recommendations for social dialogue and recommendations for public authorities:

RECOMMENDATIONS FOR SOCIAL DIALOGUE:

- Social Partners should promote the shift to circular economy by raising awareness and informing their members. This could be done by organizing events and webinars on the topic, disseminating reports and translating findings from future research into practical information for workers and enterprises. Social Partners should also further explore the socio-economic impacts of the transition towards circular economy in specific sectors and regions;
- Social Partners should bring the topic of socio-economic impacts of the transition to the Circular Economy on the agenda of Social Dialogue at different levels, e.g. European, national, regional, sectoral and/or company. Social partners should discuss just transition strategies²⁰ to move towards circular economy. Where applicable, these just transition strategies should be negotiated through social dialogue and collective bargaining structures. These should aim to deal with socio-economic challenges and optimize employment and competitiveness opportunities for workers and enterprises, and contribute to inclusive and fair transitions;
- At company level, employers and trade union representatives should use Works Councils and Health and Safety Committees – when they exist – or other relevant bodies, to collect information and develop concrete measures to move towards circular business models while ensuring a positive contribution to employment, competitiveness and a fair transition for workers;
- At regional, sectoral and company levels, Social Partners should map and anticipate the needs for training, upskilling and reskilling of workers to support adaptation to the transition to circular economy and enhance employability. Where needs are identified, training should be provided, for example by employers, training institutes, public authorities, etc. with an inclusive approach. Social Partners should also promote continuous and lifelong learning and provide support for enterprises and workers to make progress on upskilling, reskilling and training issues in the field of circular economy, including via the sharing of good practices;
- Social Partners at the different levels should evaluate the consequences of the transition to Circular Economy on collective agreements. They should evaluate whether existing collective agreements should review/revise their scope to adapt to changes in activities or if new ones should be created to cover new activities. Social Partners should also discuss and if possible agree on ways to improve working conditions and prevent informal work in those sectors where problems are identified/prevalent.
- Social Partners should strengthen the implementation of health and safety measures as part of guaranteeing good working conditions in activities related to circular economy transition, in particular in waste handling and re-manufacturing from secondary raw materials;

20 See ILO guidelines for a just transition towards environmentally sustainable economies and societies for all (2015), https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf

- Circular economy can bring many opportunities but also some challenges when it comes to enterprises' competitiveness. Social Partners should discuss ways to help ensure the competitiveness of enterprises, taking account of particular needs of SMEs, moving towards more circular business models;
- Social Partners should discuss ways to ensure that the shift to circular business models goes along with improving gender equality and inclusiveness of the labour market.

RECOMMENDATIONS TO PUBLIC AUTHORITIES:

- Policy makers should properly consider the impact of the transition to circular economy on the world of work. The socio-economic dimensions should be fully integrated in policies related to circular economy;
- In terms of governance, policy makers should involve Social Partners in the design and implementation of European, national, regional and sectoral circular economy action plans and policies;
- Policy makers should ensure that labour markets and education and training systems are adequately equipped to accompany the transition to the circular economy in a way that supports inclusive and sustainable employment, good working conditions and competitiveness.
- Policy makers and public authorities should ensure sufficient public and private funds to support a fair and inclusive transition to circular economy, while ensuring competitiveness. These funds should promote quality employment, innovation, reskilling and upskilling. Targeted support for SMEs to move more rapidly to circular economy and to support their workers should also be provided.
- Policy makers should ensure that education and training systems provide future workers with the appropriate skills to support the transition to the circular economy and that incentives exist to ensure availability of manpower for specialized and technical tasks.
- Supply and demand for secondary raw materials are essential for the development of Circular economy and should be strengthened. Policy makers should create and facilitate a well-functioning market for high-quality secondary raw materials through measures in the Second Circular Economy Action Plan.
- Policy makers should reinforce the competitive position of circular products on the market, including through stronger market surveillance to ensure fair competition and a level playing field;
- Policy makers should provide employers, workers and their representatives with a knowledge-based support (e.g. support for information and technical assistance; support for regional or sectoral training centers, support for formal collaborations and knowledge exchange on CE-related activities). This is especially important for SMEs.

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8. ANNEXES

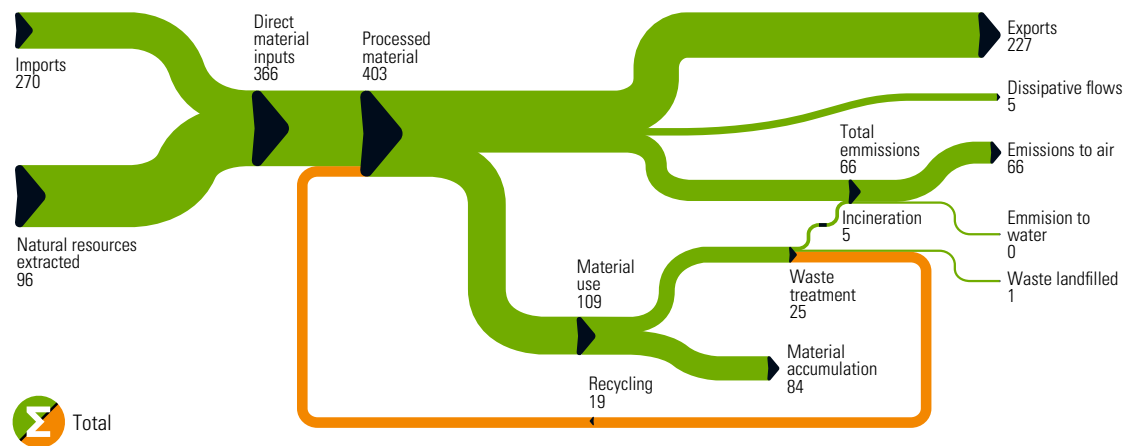
8.1. NATIONAL PERSPECTIVE: CONTEXT AND SWOT ANALYSES

8.1.1. BELGIUM

In Belgium, material flows (Figure 3.2) are dominated by import and exports, highlighting the importance of the country as a logistics hub within the EU and how open the country's economy is. The internal use of resources is very much dominated by material accumulation, and the generation of municipal waste is slightly decreasing, from an average of 471kg/capita in 2000 to 411 in 2018. Recycling rates in the country are high. Municipal waste recycling has slightly increased over the past 20 years, from 49.7% in 2000 to 54.6% in 2018, and recycling of packaging waste increased from 62.5% in 2000 to 83.8% in 2017. Recycling of e-waste is however less practiced, with an increase from 30.4% in 2010 to 39.3% in 2018.

FIGURE 3.2. MATERIAL FLOW DIAGRAM FOR BELGIUM IN 2017 IN MT (MILLION TONNES)

Material flow diagrams 2017 for Belgium
Million tonnes



Total

Sources: env_ac_mfa, env_ac_sd, env_wassd

eurostat

Employment in CE sectors has remained constant in recent years, from 1.19% of the total workforce in 2012 to 1.1% in 2017. Nonetheless, modelling predicts a small net gain in employment as a result of the CE transition (Cambridge Econometrics, Trinomics and ICF, 2018), and Workshop 1 participants identified opportunities for employment volume (see under opportunities below).

The outputs from the Belgian breakout room session held during Workshop 1, which are synthesised in section 3.6, are presented in Table 3.1 below.

TABLE 3.1. SWOT ANALYSIS – BELGIUM

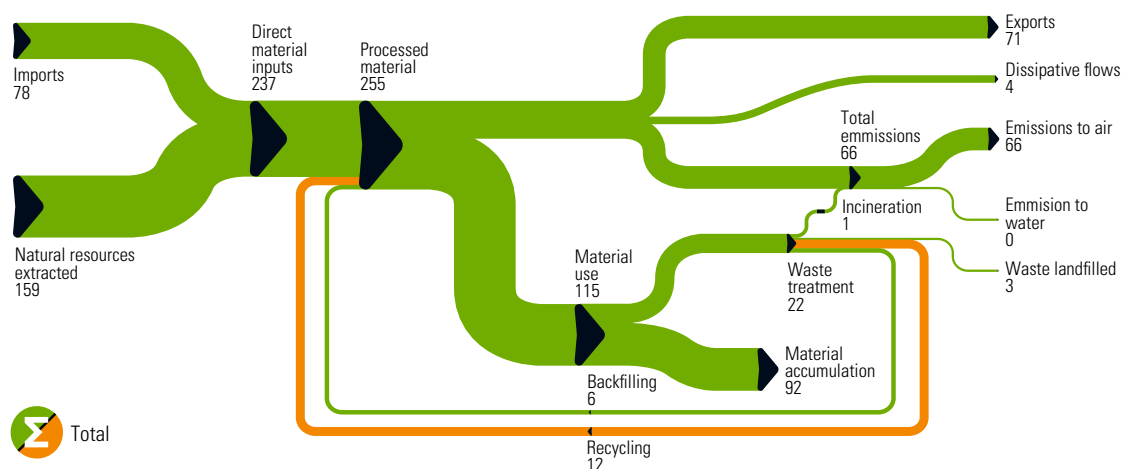
TABLE 3.1. SWOT ANALYSIS – BELGIUM	
STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> Multiple sectors are at cutting edge of recycling of valuable materials, meaning these sectors have an advanced knowledge about the topic Qualified workforce in Belgian industry Belgium is a logistics hub and has a central geographic position in Europe Regulation is already well-developed Cooperation amongst top research institutions and within the industry (industrial networking) Social dialogue is well-developed, including sectoral tools and institutions 	<ol style="list-style-type: none"> Lack of knowledge of circular economy outside of recycling sectors: too little attention is given to ecodesign, product as a service, repair/maintenance, etc. Lack of political (federal) vision and framework concerning circular economy and regulation could be further developed (e.g. no recycling content obligations) Two federal Ministries have responsibilities linked to CE Insufficient information and communication about new materials towards citizens CE is a niche activity in most companies, rather than a central part of their strategy The price ratio between primary and recycled materials, as some recycled materials are relatively more expensive than primary materials Lots of companies are non-European, making it difficult to impact their decisions
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> Belgium could be a logistics hub for secondary raw materials To reduce external dependency on raw materials To export of new technologies developed in the context of CE Some industrial sectors could benefit from image gains, e.g. new attractiveness of the waste management sector for high qualified workforce Upskilling every worker, with a special emphasis on less-qualified workers Relocation of some activities and employment in Belgium Job opportunities for vulnerable workers/groups 	<ol style="list-style-type: none"> Insufficient investment in technologically and scientifically skilled talents (students, unemployed and employees), meaning that the labour shortage of technical professions will further increase Lack of available training Insufficient involvement of employees representatives (sectoral and company level)
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS	
<ol style="list-style-type: none"> Creating joint training centres at sectoral level (Circular materials centre e.g.) Promoting lifelong learning, in particular for employees in SME's Organising discussion at sectoral level concerning the lack of raw materials and future of the sectors Joint committee No. 142.04 : "Circle for jobs" (knowledge platform, training for employees) 	

8.1.2. CZECHIA

In the Czech Republic, the material flow (see Figure 3 3 below) is dominated by natural resources extraction (169 million tonnes in 2017), however imports also play an important role (78 million tonnes in 2017). Large share of the processed materials are exported (71 million tonnes in 2017), however it is somewhat dominated by material accumulation (92 million tonnes in 2017). The share of materials treated as waste is relatively limited, 22 million tonnes, out of which 4 million tonnes are landfilled or incinerated. The remaining share is either recycled (12 million tonnes) or backfilled (6 million tonnes). Generation of municipal waste has remained stable over the past years while its recycling has increased noticeably, from 18% in 2010 to 35% in 2018. Recycling rates of e-waste were growing between years 2010 and 2016 (from 22% to 55%), however has decreased again in recent years (43% in 2018).

FIGURE 3.3. MATERIAL FLOW DIAGRAM FOR CZECHIA IN 2017 IN MT (MILLION TONNES)

Material flow diagrams 2017 for
Czechia
Million tonnes



No interviews were held with Czech national social partners²¹, therefore there have been no country specific findings regarding impacts on employment volume, skills and competitive position of companies.

The outputs from the Czech breakout room session held during Workshop 1, which are synthesised in section 3.6, are presented in the Table 3.2 below.

TABLE 3.2. SWOT ANALYSIS – CZECHIA

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Increasing the awareness of all stakeholder at all levels about the need to move to the SDGs and circular economy 2. Involvement of the social partners in policy-making, participating in the different experts' team, making comments and recommendations. 3. Social partners just involved in the expert group preparing Circular Czechia 2040 	<ol style="list-style-type: none"> 1. There is still no complete/coherent Circular Economic Strategy. The strategy Circular Czechia 2040 is being prepared with the help of the OECD and financial support of the European Commission. 2. The social partners are involved in the policy-making and legislative process, but many times their comments and recommendation are not fully reflected. No common agenda of the bipartite dialogue. 3. Limited capacity and expertise of the social partners. 4. Lack of cooperation among different ministries involved in the Circular Economy transition
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. New technologies, innovation, new skills expectation, new business models, new added value of higher productivity of work. For workers: new jobs, new career paths. 2. Education reform starting from early child education, adult education. 3. Higher position in the global supply value chains, higher added value of labour. 	<ol style="list-style-type: none"> 1. Lack of evidence that can increase the concerns in the different fields - how many jobs can be lost, how many created. 2. For trade unions there are concerns about quality and decent jobs. For employers there is a lack of adequately qualified workers.
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS	
<ol style="list-style-type: none"> 1. Awareness raising campaigns. 2. Collaboration with educational institutions, NGOs and consumers. 3. Joint workshops. 4. Cooperation with schools. 	

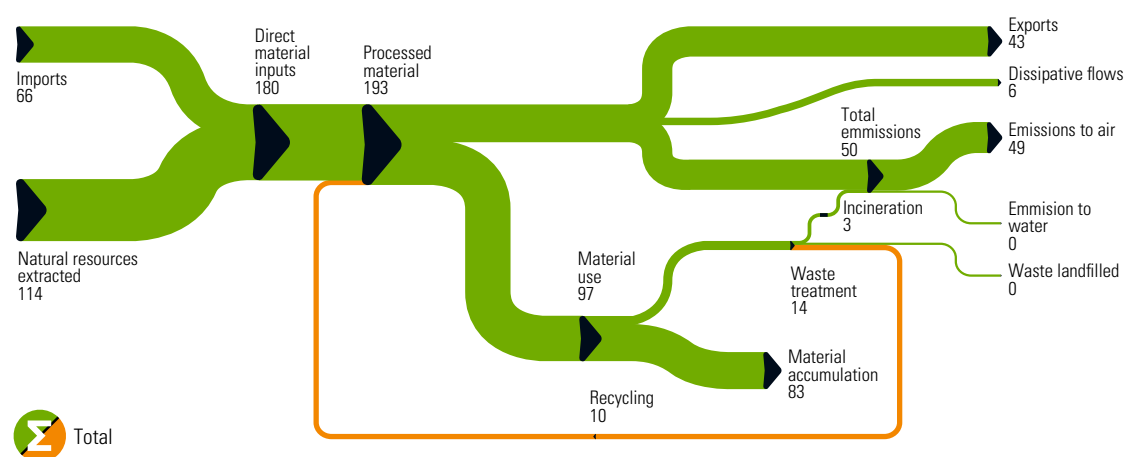
21 The national social partner expressed lack of expertise / knowledge to provide inputs for the study.

8.1.3. DENMARK

The material flow (see Figure 3.3 below) in Denmark is split between imports (66 million tons in 2017) and natural resources extracted (114 million tonnes). The processed materials are, in most cases, either exported (43 million tons), emitted into air (49 million tons) or processed as 'material accumulation' (83 million tons). Only a very small fraction of processed material is treated as waste (14 million tons), majority of which is recycled (10 million tons). Denmark produces a (somewhat) large quantity of municipal waste²², its recycling rate, however, has been gradually increasing (from 40 to 50% between 2010 and 2018). E-waste recycling rate has increased rapidly, especially since 2017 (went from approx. 40% before 2017 to almost 70% after 2017).

FIGURE 3.4. MATERIAL FLOW DIAGRAM FOR DENMARK IN 2017 IN MT (MILLION TONNES)

Material flow diagrams 2017 for
Denmark
Million tonnes



Sources: env_ac_mfa, env_ac_sd, env_wassd

eurostat

With regards to **employment volume**, the field of 'servitisation' in Denmark is experiencing a large boom, there is a big market share of professional products where the large part of the sale is the subsequent service of the product. The switch to repair is, due to consumer preferences, expected to be done by smaller companies and/or freelancers. Another sector that is to be positively impacted by the shift to circular economy is the waste management sector. In this sector, the sorting work is performed under conditions that have difficulties in meeting the applicable health and safety regulations. As such waste management companies plan to introduce technologies for sorting, that could generate new jobs (in the development and manufacturing of the technology) and make the waste sorting jobs more attractive. With regards to **skills**, the interviewees consider important overall to have knowledge of CE and its concepts, especially for new companies (who often claim to be 'circular by design'). It is important for leadership of companies to also be aware of CE concepts. Furthermore, workers should have knowledge of materials – there will be demand for this. However, overall it is not expected that the everyday jobs of all workers will change, but the business models as a whole will have to change to address the shift to CE.²³

The outputs from the Danish breakout room session held during Workshop 1, which are synthesised in section 3.6, are presented in the Table 3.3 below.

²² In comparison with the other countries present at Workshop 1 (BE, CZ, DK and DE).

²³ Practical example: laundry firms who own the linen and lend it to hospitals. Shift to CE will not change the job of the workers but it incentivise the companies to get better linen to last longer.

TABLE 3.3. SWOT ANALYSIS – DENMARK

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. The Danish model for strong collaboration to find solutions. 2. Support from companies and employees - but requires knowledge and inspiration. 3. Good knowledge and best practices sharing between companies and knowledge institutions. 4. Strong focus on the entire value chain. 5. Cooperation with vocational education and training on competence development in relevant areas. 6. Tradition for environmental technology in companies. 7. Ability to adapt quickly to changing industries. 	<ol style="list-style-type: none"> 1. Applicable legislation is only now being put in place. Currently, the only relevant legislation in place is regarding waste management. 2. Need for better anticipation of what skills and competences will be needed. 3. Need for better focus on good work environment.
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. Growth and job opportunities for workers on the edge of the labour market. 2. New EU regulatory requirements on recycling will create more jobs (e.g. textile recycling). 3. Climate action will mean more investments in the relevant sectors. 4. Export potential – Denmark has a tradition of exporting green solutions. 	<ol style="list-style-type: none"> 1. Lack of knowledge, uncertainty on what the circular transition will mean (specifically on manual sorting workers). 2. Lack of clarity on whether and how quickly implementation of new initiatives (e.g. Paris Agreement, extended producer liability). 3. Various measures across the EU rather than harmonization of policies.

POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS

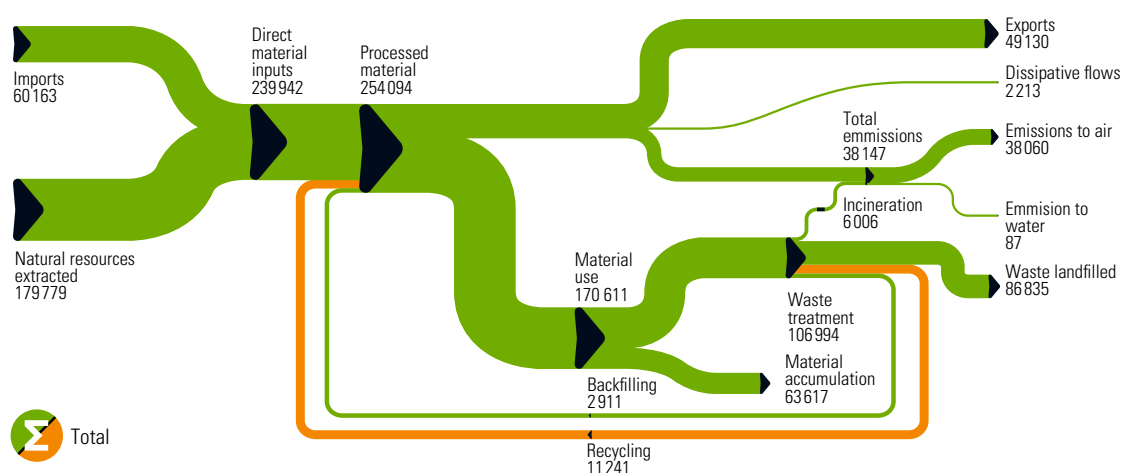
1. Maintain good social dialogue, e.g. in the Industry Community for Working Environment.
2. Dissemination of good practices from Denmark, preferably at EU level. Good Danish examples are disseminated, preferably at EU level.

8.1.4. FINLAND

In Finland, the resource flows (Figure 3 5) are dominated by the natural resources extracted, a large share of which is landfilled. This is due to the large presence of extractive industries in the country. Municipal waste generation per capita stagnated from 2000 to 2017, and subsequently increased between 2017-2019. Overall, it increased from 502 kg/capita in 2000 to 566 in 2019. Recycling rate broadly speaking is surprisingly low compared to other material flows, considering the high level of development of the country. Specific data on recycling shows that municipal waste recycling has increased from 33.6% in 2000 to 43.5% in 2019, e-waste recycling increased quite rapidly from 28.7% in 2000 to 49.2% in 2019, and packaging waste recycling increased from 49.8% in 2000 to 70.2% in 2019. High landfilling rates are most likely due to the landfilling of the extractive industries.

FIGURE 3 5 MATERIAL FLOW DIAGRAM FOR FINLAND IN 2018 IN KT (THOUSAND TONNES)

Material flow diagrams 2018 for
Finland
Thousand tonnes



The number of people employed in CE sectors has slightly decreased since 2012, and accounted for 1.58% of the people employed in 2017. A previous study expected gains in net employment volume to be very small (Cambridge Econometrics, Trinomics and ICF, 2018), which was confirmed in interviews with Finnish stakeholders. As for most (if not all) EU MS, losses are expected towards the upstream section of value chains (production, retail), with gains towards the end (re-manufacturing, recycling). Re-localisation of some industries is possible, notably for textiles. Nevertheless, textiles could also face job losses due to the increase in refurbishment/reuse, leading to less sales. This example highlights that there is still uncertainty as to the exact impacts in some sectors. However, this is not a fundamental concern as the most important changes will be in the structure of jobs, rather than the number (interviews with Finnish stakeholders from the public sector).

To adapt to such changes in the structure of jobs, the interviewees stressed the need to focus on qualifications and skills as well as aspects related to competitive position. They mentioned the need for investment at all levels of education as well as during work life to ensure that skills needs will be met, with research ongoing to anticipate such needs. Finnish companies are beginning to understand that CE activities might be competitively interesting and perhaps even necessary (i.e. the changes will bring profits as it is economically advantageous to be a frontrunner, but this is also about risk management). On the other hand, companies are worried about how to concretely transition, what it would mean for their business, and whether their employees have the right skills. These concerns highlight a need for the government to engage in discussion with the different sectors, industries and employee organisations. The transition is still at an early stage in Finland, with changes so far happening at a small scale.

The outputs from the Finnish breakout room session held during Workshop 2, which are synthesised in section 3.6, are presented in Table 3 4 below.

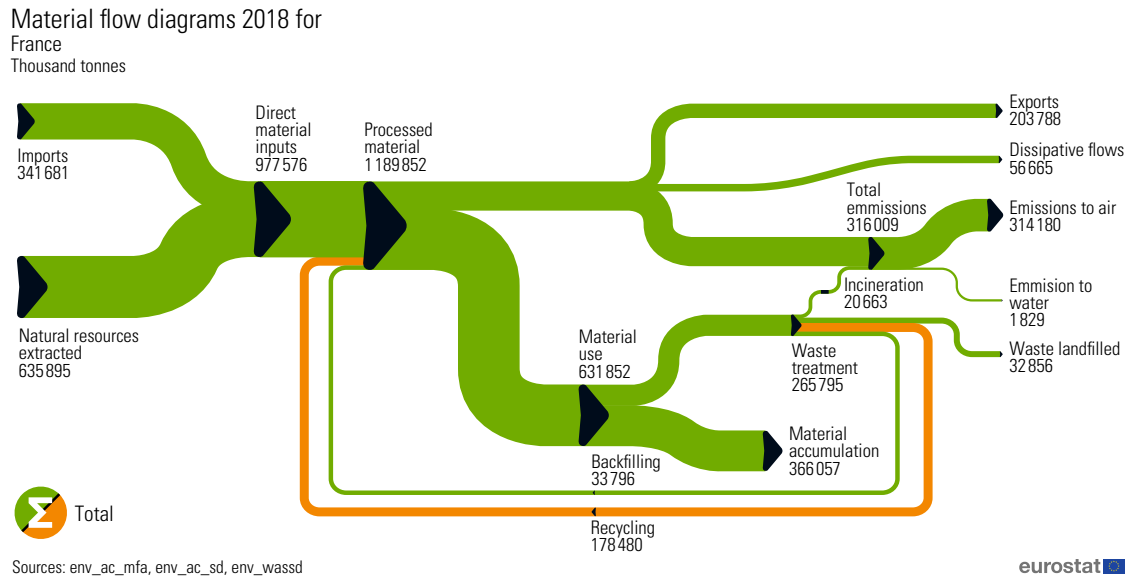
TABLE 3.4. SWOT ANALYSIS – FINLAND

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Some new projects are being launched, which will lead to job creation (e.g. a upcoming recycling project in the textile sector) 2. Good skills and education (employees are well-trained and enthusiasm exists for new learning) 3. High know-how in the ICT sector, including on how to harness digitalisation in the circular economy 4. Processes have traditionally been developed in the industry. This creates a good basis for the transition to a circular economy 5. Cooperation between business and administration is an great advantage 6. Broad acceptance of CE amongst various parties 	<ol style="list-style-type: none"> 1. Problems linked to the availability and demand of recycled raw materials 2. Waste transportation (different Member States may have different categories for the same waste) 3. Issues related to regulation, taxation and subsidies prevent the creation of some business opportunities 4. Bottlenecks in new skills and education in the transition to a circular economy. 5. Bureaucratic hurdles linked to licensing: when changing raw materials, a site-specific environmental permit to be opened. 6. Insufficient willingness to pay for slightly more expensive products by customers 7. Increased costs to store waste prior to recycling 8. Landfill waste is incinerated in Finland, and therefore not included in CE (used to produce thermal energy, which is however utilized somewhat well). 9. Growth of start-ups with CE could create issues linked to working conditions, perhaps subsequently slowing down the transition 10. Finland's geography: remote position in the north, long distances and sparsely populated country
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. The potential is really great, because CE is still quite small in Finland 2. Opportunities on the service side, as long as successes in design, product development, etc. are achieved and new business models can be set-up 3. EU regulation can create markets: actors should identify incremental steps and then ambitiously move forward (e.g. recovery of textile and electrical electronic waste can ensure a strategic autonomy from raw materials) 4. Creating sufficient incentives (taxation, subsidies, regulation, raw materials) to be able to exceed the initial cost thresholds for new business 5. Improving everyone's quality of life (by making employees more relevant, making consumers to buy better products / services, and making companies successful) 6. Huge potential in public procurement 7. Emphasizing strategic autonomy at EU level to build resilience and step-up ambitions 	<ol style="list-style-type: none"> 1. Job losses if the updating of skills for employees is insufficient. Continuous learning system deficiencies are the biggest challenges. Generally in Finland, there is on-the-job learning and skills updating. But funding may need to be increased 2. Local synergies are lost: expert training not always in line with needs, cooperation between educational institutions is insufficient 3. Excessively passive role of public power. If the potential of the circular economy is not seen, not enough will be invested in it in order to create a market for CE (e.g. continued existence of regulatory or other administrative barriers) 4. Not enough attention may be paid to the activities at the municipal level 5. The level of ambition in the development of public procurement may be too low. Enormous potential that is not yet sufficiently exploited
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS	
<ol style="list-style-type: none"> 1. Emphasizing the importance of public procurement 2. Identifying new training needs linked to CE-related changes 3. Advocating for R&D investments to boost CE in Finland 4. Mapping licensing problems and working together to eliminate them. 5. There could be more joint projects on the employee and employer side together. There has been good cooperation in some areas (e.g. joint seminars, establishment of a joint informal network, thinking together about EU-level messages) 	

8.1.5. FRANCE

Material flows in France (Figure 3.6) are dominated by natural resources extracted. The recycling rate is high compared to incineration and landfilling, and waste treatment broadly speaking is a flow almost as important as material accumulation. Municipal waste generation slightly increased since 2000, from 514 kg/capita in 2000 to 546 in 2019, and its recycling during that timeperiod increased from 24.5% to 46.3%. E-waste recycling increased from 21.8% in 2010 to 34.2% in 2018, while packaging waste recycling increased from 42.2% in 2000 to 65.7% in 2018.

FIGURE 3.6. MATERIAL FLOW DIAGRAM FOR FRANCE IN 2018 IN KT (THOUSAND TONNES)



The number of people employed in CE sectors has been stagnating in recent years, with a relative contribution to total number of people employed varying from 1.66% in 2010 to 1.63% in 2017. In the future, a small net positive effect is expected in the country as a result of the CE transition (Cambridge Econometrics, Trinomics and ICF, 2018).

The outputs from the French breakout room session held during Workshop 3, which are synthesised in section 3.6, are presented in Table 3.5 below.

TABLE 3.5. SWOT ANALYSIS – FRANCE

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Legal framework: the Climate Law under discussion (with several EC measures and responsible public procurement), law on the Duty of Vigilance (2017), National Roadmap for CE (and section 6 on professional transitions) 2. Support from the National Agency for Ecological Transition (ADEME) 3. National dialogue on CE at: <ul style="list-style-type: none"> > The Platform for Corporate Social Responsibility (CSR), a platform for dialogue between employers, employees and civil society > The Economic, Social and Environmental Council, which advises the lawmaking bodies on questions related to social and economic policies 	<ol style="list-style-type: none"> 1. Insufficient cooperation between: private actors, all stakeholders including public institutions, intermediary bodies (employee unions and civil society representatives) and private actors. 2. The slowness of regulatory changes 3. Social dialogue in companies: although they were granted a broader mandate (see in strengths), SECs have insufficient resources for environmental considerations, including the transition to the circular economy 4. Lack of dialogue on anticipating the needs for jobs, skills and qualifications, as well as on the quantity and quality of jobs (including in the context of GPEC)

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| <ul style="list-style-type: none"> 4. Company-level dialogue at: <ul style="list-style-type: none"> > Social and Economic Committees (SEC), the employee representative bodies that are mandatory in companies of over 11 employees, which had their powers broadened under the new Climate Law. > Introduction of the environment into dialogues on strategic workforce planning (GPEC in French), which are a forward-looking human resources management approach that supports change to jobs, organisation of work and skills to the requirements resulting from business strategy and changes in their economic, technological, social and legal environments. 5. A sector-specific approach, with strategic sector committees and sector contracts (e.g. the "Waste Transformation and Recovery" Strategic Sector Committee) 6. Social dialogue at inter-professional and sectoral level (cf. National Industry Council) 7. Reliance on certifications, which become assets for Customers (e.g. ISO 26001, ASI, ect.) 8. Knowledge gains via experiments and studies 9. Awareness and commitment from the business sector to CE 10. Awareness of part of the population | <ul style="list-style-type: none"> 5. Lack of knowledge about CE, including about its effects on jobs and skills and its potential for innovation and development. This concerns: <ul style="list-style-type: none"> > Companies (all levels) > Elected officials 6. The cost of primary raw materials remains below the cost of recycled materials 7. National Recovery and Resilience Plans: the social partners are not involved in the orientation of investments - including for the circular economy 8. Responsible public procurement is insufficiently relied upon, with only small fractions of government contracts and contracts from public establishments including social and/or environmental clauses 9. Lack of social conditionalities attached to public aid for businesses (e.g. on employment and respect for social rights) 10. Incomplete information to consumers on the environmental and social impacts of products 11. There is a strong focus on recycling, but the employment potential of activities linked to valorization and repair is overlooked |
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OPPORTUNITIES	THREATS
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| <ul style="list-style-type: none"> 1. To develop competitiveness, including through skills development (e.g. life cycle analysis, ecodesign) and innovation 2. To introduce more requirements in regulations, including via the Climate Law (e.g. environmental and occupational safety requirements into product design) 3. To focus on sustainability of products and of companies 4. To relocate jobs in France, and create more quality jobs (e.g. via investments in R&D) 5. To train: <ul style="list-style-type: none"> > Employees > Students (including in the grandes écoles) > Members of SECs 6. Linked to the previous point, to create certifications or skill blocks recognizing skills contributing to the circular economy, in order to enhance these jobs, in particular in the repair, reuse and reuse sectors 7. To further involve employees in processes, and by doing so strengthening their commitment to their companies 8. Employers can rely on trade unions which signed a pact with the global compact and which have been engaged with CE for many years. 9. To decrease the country's dependence on the supply of primary raw materials by increasing product recovery and recycling in industry 10. To increase accountability throughout value chains | <ul style="list-style-type: none"> 1. Impacts on public health and occupational health exposures 2. "Financial economics" models which impose permanent growth in profits: Finance should be viewed as a tool to serve the company, rather than as an objective per se 3. Lobby against climate action 4. Issues linked to maintaining jobs by ensuring a right to lifelong learning and training 5. Weakening of the regulatory framework in the face of substitution by standardization at international and European level, which has had limited effectiveness 6. (Illegal) waste shipments, which result in negative environmental and social impacts 7. Biodiversity loss due to lack of progress in decoupling economic activity from the use of natural resources 7. Biodiversity loss due to lack of progress in decoupling economic activity from the use of natural resources 8. Economic risks: loss of competitiveness and increased costs of intermediate consumption and/or the carbon footprint of companies |
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POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS
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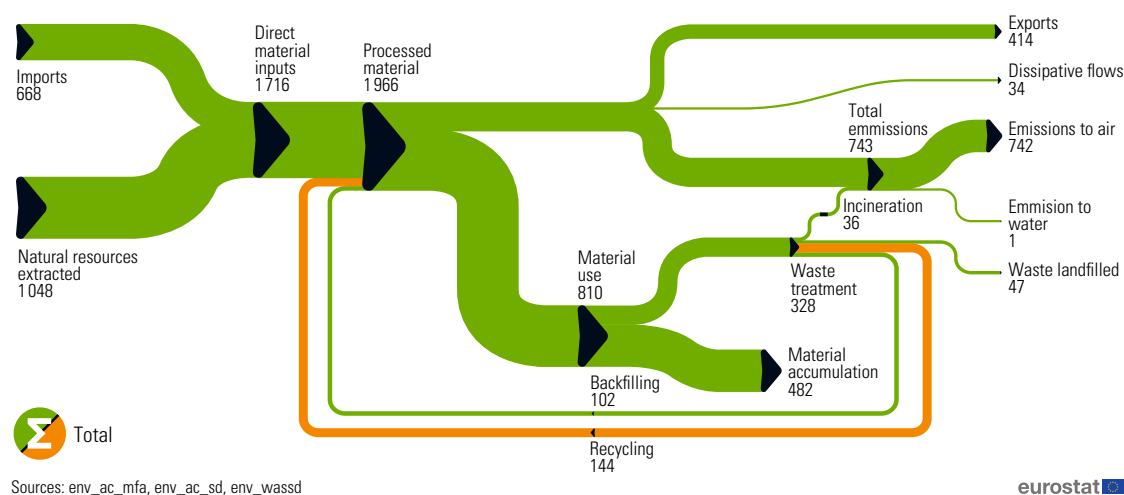
- 1. Reflection on the conditions for the development of a social dialogue on the development of CE
- 2. Contribute to better integrate CE into education and training
- 3. Share and discuss information within companies and between social partners on:
 - > Waste-generating products and their treatment methods
 - > Waste prevention and reduction actions

8.1.6. GERMANY

German material flows (Figure 3.7) are dominated by emissions to air, with a notably high fraction of waste being re-used for back-filling in construction. There is also a high rate of recycling compared to landfilling or incineration. The generation of municipal waste is slightly decreased, from 642kg/capita in 2000 to 615 in 2018, and its recycling has increased from 37.1% to 49.9% during the same period. Recycling of e-waste is also increasing, from 41% in 2010 to 67.5% in 2018. On the other hand, packaging waste recycling actually decreased, from 78% in 2000 to 69.9% in 2017, but the latest figures remain slightly above EU average.

FIGURE 3.7. MATERIAL FLOW DIAGRAM FOR GERMANY IN 2017 IN MT (MILLION TONNES)

Material flow diagrams 2017 for
Germany
Million tonnes



Employment in CE sectors has remained constant in recent years, from 1.43% in 2011 to 1.49% in 2017, and previous studies expect some net job gains in the country (Cambridge econometrics, Trinomics and ICF, 2018; Coats and Benton, 2015). The national social partner interviewed stressed that gains will be dependent upon the political framework, notably for creating a level-playing field and prevent unfair competition, and that companies providing and using technologies expected to benefit the most. The German industry produces high-quality goods, and CE could boost the quality of goods and therefore the competitiveness of the German industry. Many CE-related projects are currently being implemented in the country, and CE has been on the agenda of the industry for many years (notably in the case of the chemicals industry and resource use/efficiency).

In Germany, the renewable energy industry has lower quality of jobs than traditional sectors such as steel (in terms of wages, labour standards, training, holidays/free time etc), as well as lower training quality. There is therefore potential for improving collective bargaining agreements in more recently established German industry sectors. More generally speaking, a transition within existing companies was deemed less disruptive than the replacement of old companies by new ones, as transitioning within companies would preserve collective bargaining institutions which are already well established (e.g. clear rules, participation of workers), and would therefore not negatively affect the forms of work.

Social dialogue in the country is bi-partite (i.e. between employers and employees, without the involvement of public authorities). Collective bargaining could have positive effects on CE as it often involves new technology development or use, and such changes are easier to implement in companies in which workers are well-understood and their needs are taken into consideration. Nevertheless, the national social partner interviewed acknowledged that their CE strategy remains unclear, and that although they are in contact with industry partners on this topic, these discussions have so far remained informal (interview with national social partner). Nonetheless, social dialogue has already led to the creation on guidelines related to sustainability (including both economic and social dimensions) which are subsequently implemented by companies (Workshop 1).

Qualifications and skills development and update is also influenced by social dialogue. Germany has dual system in which companies are responsible for the technical part of training; hence, curricula are regularly discussed with employers and trade unions and adapted to become more modern and more sustainable. If there is an agreement between the parties, the state will transcribe the proposal into legislation (Workshop 1). However, many companies lack strategies to adapt to the transitions (both digitalization and CE). Such strategies could help to identify skills and qualification needs, and use these findings to train workers and provide other forms of support (national social partner interview).

Strategies should identify needed qualification levels. Once a clear view on what is needed is developed, then it is possible to provide workers with training and other forms of support (national social partner interview).

The outputs from the German breakout room session held during Workshop 2, which are synthesised in section 3.6, are presented in Table 3.6 below, and align with the above synthesis of findings on the expected impacts.

TABLE 3.6. SWOT ANALYSIS – GERMANY

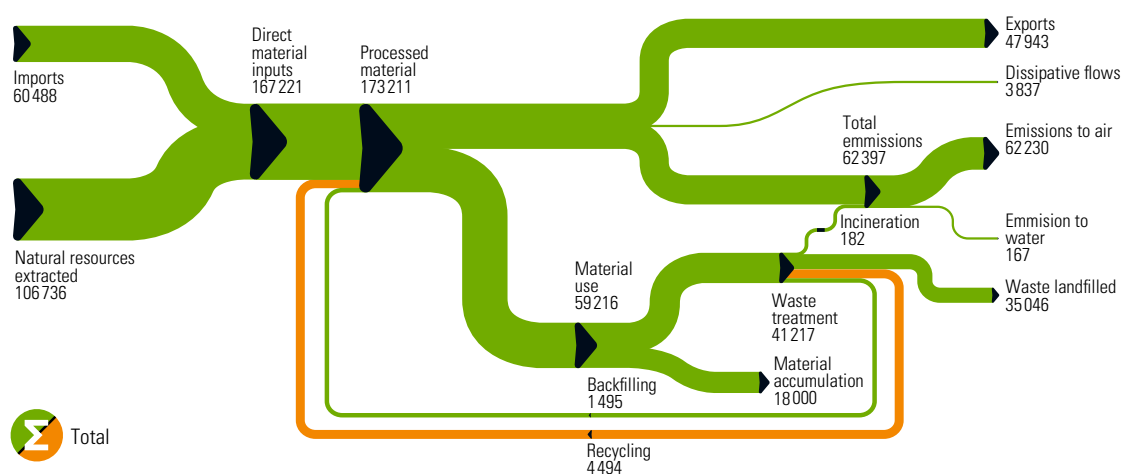
STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Good master training that makes the workforce fit for CE (inter-company solutions, dual system in which companies are responsible for the technical part of training, further training offers by the chambers of crafts / environmental centres keep our specialists fit) 2. Job-related sustainability is a cross-cutting issue in the ÜLU (i.e. the Inter-company apprenticeship training in the craft) and can include CE 3. Strong cooperation and support structures nationally and in the regions 	<ol style="list-style-type: none"> 1. Worrying trend in the training ability of young future professionals: there is a lot of catching up to do to adjust training plans to CE (new skills, jobs are becoming more complex) 2. For some companies, the topic of circular economy is still not present enough 3. CE is increasingly moving away from an intuitive approach towards a more schematic, theoretical model 4. The CE model is often thought of as industrial and therefore partly rewards non-informal employer / employee (AG / AN) solutions. 5. Low attractiveness of some apprenticeships, especially in the handicrafts
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. New business models can be further developed in the field of repair, maintenance and processing, e.g. Product as a Service (PaaS) 2. New and more job opportunities in areas such as repair and maintenance 3. Less hazardous substances and waste generation 	<ol style="list-style-type: none"> 1. Policy instruments that are only tailored to larger (industrial) companies can threaten SMEs in practice, notably: <ul style="list-style-type: none"> > bureaucratic costs linked to documentation; > obligations to keep spare parts in stock for mass production make sense, but are very disproportionate for individual production by SMEs; > the prohibition of certain products and certain substances can endanger the business capacity of SMEs; 2. Higher costs for the circulatory system due to
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS	
<ol style="list-style-type: none"> 1. Placing CE as an employer / employee (AG / AN) topic (instead of just a topic related to business model orientation) 2. Positioning CE as a topic for SMEs (not centred on footprint, global chains, etc., but as a social project with local effects) 3. Awareness raising actions 4. Promote macro-level cooperation between employers & employees 	

8.1.7. GREECE

In Greece, material accumulation represents a small portion resource flows, compared to waste treatment (Figure 3.8). In addition, most waste is landfilled, with a much smaller fraction being recycled. Municipal waste generation increased from 2000 to 2010, and then stagnated from 2010 to 2019, reaching 524kg/capita. Municipal waste recycling increased from 8.8% 2000 to 21% in 2019, but remains well below the EU average of 47.7%. E-waste recycling increased from 19.4% in 2010 to 35.8% in 2018, while packaging waste recycling increased quite significantly over the past 20 years, from 33.3% in 2000 to 68.6% in 2018. Despite the improvements visible in these statistics, a Greek speaker during Workshop 3 confirmed that the country remains a “black sheep” of Europe in waste management.

FIGURE 3.8. MATERIAL FLOW DIAGRAM FOR GREECE IN 2018 IN KT (THOUSAND TONNES)

Material flow diagrams 2018 for
Greece
Thousand tonnes



Sources: env_ac_mfa, env_ac_sd, env_wassd

eurostat

The number of people employed in CE sectors has been stagnating in recent years, with a relative contribution to the total number of people employed evolving from 1.43% in 2011 to 1.53% in 2018. Overall, a small positive effect is expected as a result of the CE transition (Cambridge Econometrics, Trinomics and ICF, 2018).

During a presentation in Workshop 3, two speakers from Greece (one representative for employers, one representative for workers) explained that although there has been some work undertaken by public authorities (e.g. a national council on CE, coordination of action by an inter-ministerial committee, design of the National Action Plan on CE), many aspects linked to the social and labour implications of the transition still need to be discussed, agreed upon, and followed-up with action, notably: sectoral and regional dimensions, awareness raising as workers do not know about CE, working conditions, new training/skill development, the involvement of social partners, implications for collective agreements, priorities to be set in legislation. Considering the scale of follow-up work still needed, one speaker labelled the government’s goals as “wishful thinking”.

The outputs from the Greek breakout room session held during Workshop 3, which are synthesised in section 3.6, are presented in Table 3.7 below.

TABLE 3.7. SWOT ANALYSIS – GREECE

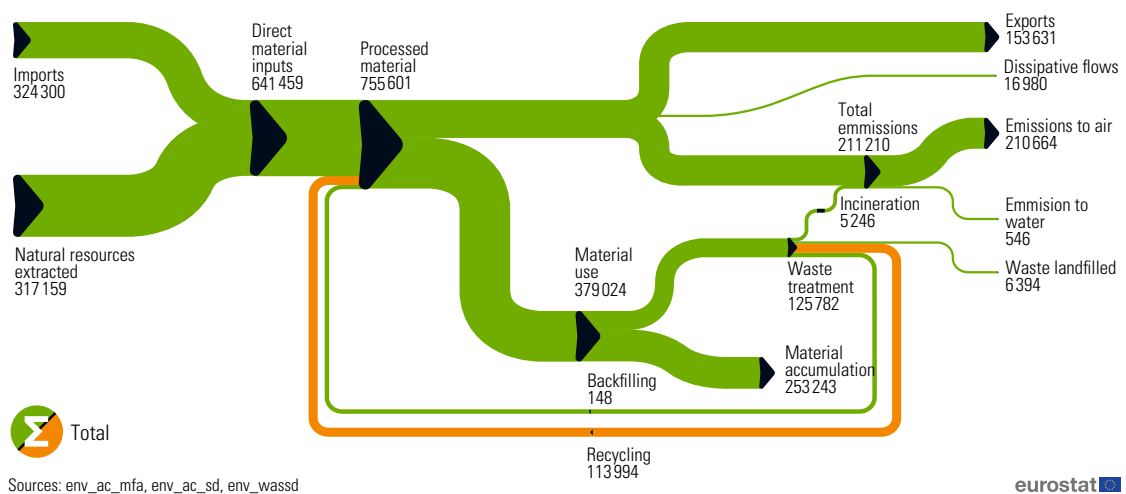
STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Flexibility and adaptability of the economy and employees 2. The small size of companies makes it easy to take decisions 3. Understanding of emergency to transition towards a more circular economy 4. Service-oriented economy, hence less need than other Member States to increase circularity in heavy industry 	<ol style="list-style-type: none"> 1. Poor waste management system 2. Low level of automation 3. High level of unemployment (including in the youth) and informal/undeclared work 4. Low level of impact of national collective agreement, and cannot be fully implemented in smaller companies 5. Absence of tripartite discussions with local/national authorities 6. Insufficient consultation in public decision-making: public consultation takes place after the law has been passed, the labour confederation does not have a seat at the circular economy table. 7. Inadequate financing of transition 8. Difficulty to develop environmental bonuses, which are excluded from taxation 9. Difficulty to link personal behaviour as a customer with the impact on personal job 10. Training and re-skilling: Priority target group for training not yet defined, no universal reskilling or training at national level (it only takes place only at company level)
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. New business development and branding of companies 2. Innovation via R&D 3. Development of training curricula 4. New jobs of better quality, including better health & safety conditions 	<ol style="list-style-type: none"> 1. Economic environment/GDP reduction 2. Training: lack of financial incentives and delays in changing curricula 3. Dependence on imported products 4. Geographical peculiarities increase costs for waste collection 5. Legislative rather than culture approach
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS	
<ol style="list-style-type: none"> 1. Monitoring mechanism 2. Extension in collective (sectoral) agreements 3. Development of training curricula and delivery of training 4. Agreement on indexes to follow 5. Representation of Social Partners in high level authorities/bodies 	

8.1.8. ITALY

Material flow (see Figure 3.9) in Italy are almost equally split between imports and extracted natural resources (325 000 kt and 312 000 kt in 2018, respectively). A large share of the processed materials is, in most cases either exported (113 000 kt), emitted to the air (216 000 kt) or used as materials. The used materials are either accumulated (246 000 kt) or treated as waste (125 000 kt). The materials treated as waste are to a very large extent (113 000 kt) recycled. Italy's generation of municipal waste has been stable in the past 10 years, stable between 500 and 600 kg per capita. Its recycling rate, however, has increased quite rapidly; in 2010 just below 15% was recycled while in 2018 more than 50% of municipal waste was recycled. Recycling of electronic waste has also steadily increased, from about 25% in 2010 to almost 40% in 2018.

FIGURE 3.9. MATERIAL FLOW DIAGRAM FOR ITALY IN 2018 IN KT (THOUSAND TONNES)

Material flow diagrams 2018 for Italy
Thousand tonnes



Employment rates of persons employed in circular economy sectors have been very stable in Italy in the past 10 years, at approx. 500 000 persons, which amounts to just over 2% of the total workforce. In Italy the interviewees believe that the transition to Circular Economy will have a positive impact on employment, with up to 450 000 direct and 650 000 indirect jobs created. With regards to qualifications and skills, there is currently a gap between offer and demand. In general it is expected that workers must be more specialized and know how to deal with technologies/technical aspects (application of standards, eco-design, life-cycle thinking). In order to achieve that there is a need for a training starting from school to be developed as well as training via training in companies.

The inputs from national stakeholders present at Workshop 2, which are synthesised in section 3.6, are summarized in Table 3.8 below.

TABLE 3.8. SWOT ANALYSIS – ITALY

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> Italy is poor in raw materials so they are used to using them efficiently. Main feature of Italy is industrial cluster (they are everywhere) and they play an important role in the field of CE. The government has made available tax credit system to increase investments in CE. This investment is very important. In the long term, given the EU funds based on Green Deals, the impact will also be seen in Italy. 	<ol style="list-style-type: none"> Lack of infrastructure, bureaucratic procedures to have authorisation for waste treatment. Regulatory framework is heavy and complex. For SMEs it is difficult to have access to bank credits. Problem related to cash flow related to CE changes. Overall there aren't many measures to boost CE.

OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. CE projects are aimed at reducing the use of resources and improving their usage. 2. CE can create good brand image for the companies with respect to consumers and clients. Companies relying on CE are more resilient, can use modern technology. 3. Opportunity to establish curriculum to train professionals specialised at CE – to have them also at company level. 	<ol style="list-style-type: none"> 1. Mismatch in training and labour market – therefore the proposal to train workers. 2. If an SMEs can't access to bank credit to carry out CE, the CE project cannot be carried out.

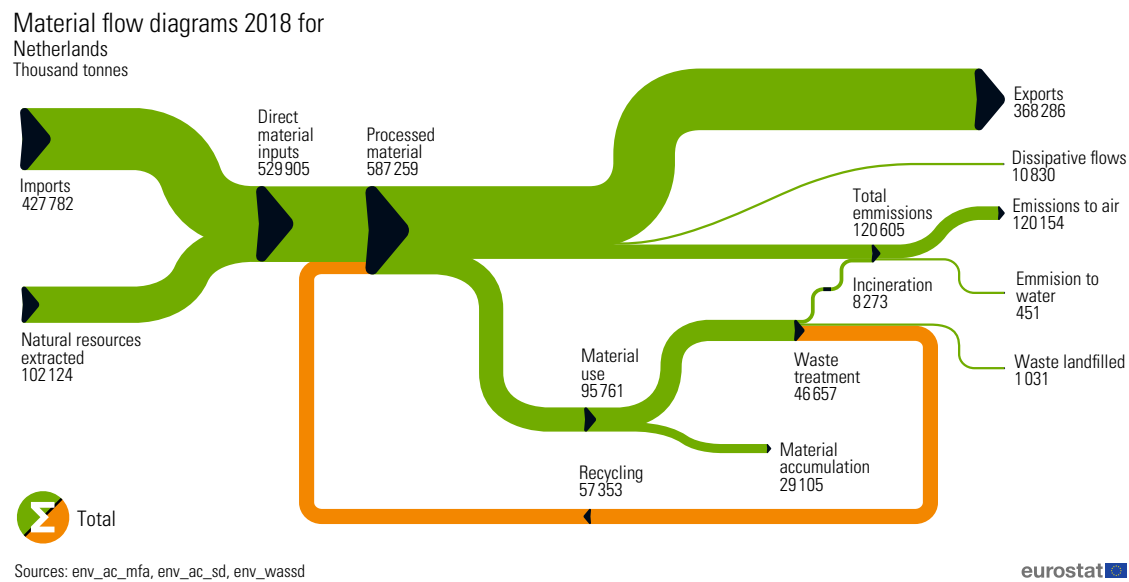
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS

1. Agreements regarding circular economy on all levels of governance as well with business to outline a common path.
2. Dialogue between NGOs, trade unions and employers.
3. Intervene with policy makers (especially at regional level) from the early stages of defining vocational training courses, so that they respond to the training needs of workers and employers.

8.1.9. NETHERLANDS

In the Netherlands the material flows (see Figure 3 10) are dominated by imports and exports, illustrating how open the country's economy is. The internal use of resources is very much dominated by the "material use", in a context where the recycling rate is very good. In contrast to the EU27 as a whole, material accumulation represents a very limited share of the use of materials. This means that the stock of material goods and of buildings / infrastructure is mature and sufficient to deliver its amenities to the population. The remaining used material is treated as waste, the majority of which is recycled with only a very small share incinerated.

FIGURE 3 10 MATERIAL FLOW DIAGRAM FOR NETHERLANDS IN 2018 IN KT (THOUSAND TONNES)



The number of persons employed in circular sectors in the Netherlands remains stable, though rather low. Since 2012 the number has remained around approx. 200 000 workers, which amounts to approx. 1.25% of the workforce. It is difficult to estimate how each sector will be impacted, however refineries and chemical industries are expected to be negatively impacted. With regards to qualification, there will be a need for (short term) manual workers, especially

in the building sector with skills to work with recycled materials. There will also be a need for workers with technical skills on all levels. Furthermore, as discussed above under the section of organization of work, national social partners from the Netherlands are concerned about the applicability of collective bargaining agreements for i) the newly emerging sectors and ii) for the workers who's sectors are changing.

The inputs from national stakeholders present at Workshop 2, which are synthesised in section 3.6, are summarized in Table 3.9.

TABLE 3.9. SWOT ANALYSIS NETHERLANDS

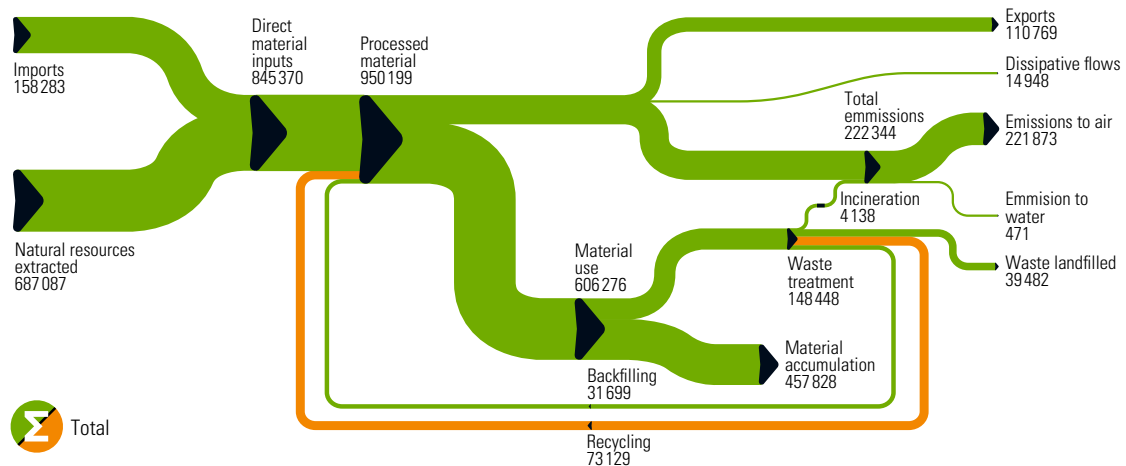
STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. New target groups – younger workers, women. 2. The work will be less 'heavy', price/quality driven work, new chances in clean jobs. 3. Less dependency on raw resources from 3rd countries. 4. New business models (e.g. product as service). 	<ol style="list-style-type: none"> 1. CE is less significant when it comes to budgeting (the topic falls under two ministeries which don't always work together). 2. CE is still perceived as recycling and/or reduction of CO₂ emissions. 3. Insufficient insight of impacts of CE on third world countries. 4. Risk of outsourcing.
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. Chances for start-ups, while large companies will adjust themselves to the new situation. 2. Collective agreements (CAOs) will be applicable also to new sectors. 3. Chance for the young and female in the job market, better quality jobs. 4. Digitalisation is on the rise – will also support compliance. 	<ol style="list-style-type: none"> 1. Lack of CAO in some sectors, on which the social partners don't have much influence. 2. Unions getting out of touch with what is happening in the economy. 3. Some consider the transition as a threat, due to the lack of understanding.
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS	
<ol style="list-style-type: none"> 1. Policy makers and social partners should be working together. 2. One should think about how to split the works per sectors differently. 3. Opportunities for workers to switch between sectors more easily, their easy training and re-skilling. 4. Joint action to create a sustainable job market that also considers workers under flexible arrangements and contracts 	

8.1.10. POLAND

In Poland the resource flow (see Figure 3 11) is dominated by natural resource extraction, while imports and exports are comparably much lower. The internal use of resources is very much dominated by the "material use", and notably by a large share of material accumulation. This means that the stock of material goods and of buildings / infrastructure is still growing in the country. Only a share of material treated as waste (148 000 kt in 2018) is recycled (73 000 kt). The rest is either landfilled, backfilled or incinerated. Generation of municipal waste in Poland has been very stable in the past 10 years, maintaining at about 300 kg per capita. Its recycling has increased rapidly between 2012 and 2015 (from 15% to 35%). The increase, however, has stagnated since, mainting at the 35% in the following years. Recycling of e-waste has also increased rapidly since 2010. In 2010 the recycling rate was approx. 17% while in 2018 the recycling rate nearly reached 45%.

FIGURE 3 11 MATERIAL FLOW DIAGRAM FOR POLAND IN 2018 IN KT (THOUSAND TONNES)

Material flow diagrams 2018 for Poland
Thousand tonnes



Sources: env_ac_mfa, env_ac_sd, env_wassd

eurostat

The employment rate in circular sectors has been very stable in the last years in Poland. Between 2010 and 2018 there has been a minimal change, with approx. 400 000 persons employed in circular sectors (which amounts to just over 2% of the workforce). However, no cross-sectoral interviews with Polish social partners has been carried there-fore there are not any further specific observations on impacts on employment and skills available.

The inputs from national stakeholders present at Workshop 2, which are synthesised in section 3.6, are summarized in Table 3 10.

TABLE 3.10. SWOT ANALYSIS POLAND

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Growing awareness among Social Partners that CE exists. 2. The creativity / ability to innovate with regards to both employers and employees, which can be a big strengths in developing CE. 3. Skills – necessary to introduce innovations – Polish labour market is highly qualified / skilled (low wages and costs of labour but high level of skills). 4. Limited resources (both a strength and a weakness). Weakness in relation to financial opportunities but at the same time, with the limited amount of resources workers and employers will show a higher aptitude for innovation. 	<ol style="list-style-type: none"> 1. Limited resources (financial) - there was a lack of financial support and had to use internal resources. 2. Cost increase – lowers the level of competition – PL has to be more pragmatic. 3. Lack of national technologies – external / imported from abroad solutions can be used but something will be lost in relation to internal technologies (related to R&D).

OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. New jobs and skills to be created. 2. Cooperation under the concept of social responsibility of businesses (corporate social responsibility) – room for sharing of experiences. 3. Younger generation entering the labour market (or will soon) – doesn't exclude the older generation but it is likely that innovations related to CE will be more easily adopted by the younger generation. 4. External support – e.g. EU funds, today's meeting and the opportunity to discuss 5. The use of post industrial zones. 6. Consumer behaviour can force changes and the CE transition – their awareness and green thinking can force businesses and employees with them to go circular – it can become fashionable; source of competitive advantage. 	<ol style="list-style-type: none"> 1. Lack of external support – it exists but it isn't sufficient at national level (even if it exists it is hard to see it). 2. Regulations (both those related to CE but also legislation concerning consumer behaviour) - there should be greater emphasis, e.g. tax incentives, to support the creation to CE. Holistic approach is required. 3. CE as a global concept (not only EU-wide), so the EU shouldn't act alone – if we are very ambitious (alone), costs will be increasing. If there are other parts of the world without strict rules, that will cause imbalance and distortion of competition. 4. 'Let's not only look at future problem but also on the waste we've already generated' - there is a lot of waste that needs to be addressed now. 5. Economic heritage of every country – the specifics of every country needs to be taken into account. 6. Lack of focus on education / training curriculum.

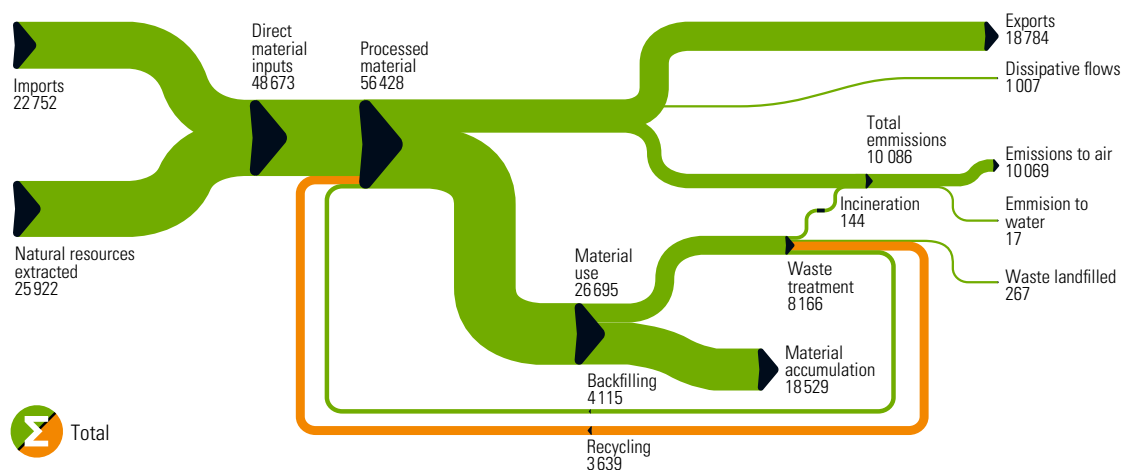
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS
<ol style="list-style-type: none"> 1. Education / training system. 2. Cooperation on CSR.

8.1.11. SLOVENIA

The material flows within the Slovenian economy (Figure 3.12) are dominated by material accumulation, illustrating the importance of the construction sector (buildings and infrastructure). The generation of municipal waste per capita had decreased from 2000 to 2012, but then started to increase again, almost back to 2000 levels, which highlights a trend of material renewed consumption. The latest data shows an average of 504 kg of municipal waste generation per capita in 2019. The waste treatment is very efficient, with an equal share of recycling and of waste being re-used for back-filling in construction, while the flows towards landfilling or incineration are small. The recycling of municipal waste increased tremendously since 2000, from 6% to 59.2% in 2019, and now stands above EU average. Recycling of e-waste has not been linear, but nonetheless increased from 22% in 2010 to 33.6% in 2018, while the recycling of packaging waste increased moderately, from 61% in 2010 to 70.1% in 2017.

FIGURE 3.12. MATERIAL FLOW DIAGRAM FOR SLOVENIA IN 2018 IN KT (THOUSAND TONNES)

Material flow diagrams 2018 for Slovenia
Thousand tonnes



Sources: env_ac_mfa, env_ac_sd, env_wassd

Only the effects on employment volume were discussed in the interview conducted with the Slovenian trade union, who argued that CE will not drastically change the situation on the labour market because it is a process that has been going on gradually for some time. This statement is broadly in line with recent statistics and evidence from literature: the share of people employed in CE sectors has decreased since 2012 but remains above EU average, with 2.06% of the workforce in 2017, and a recent modelling study predicted an overall small positive net change in employment volume due to CE in Slovenia (Cambridge Econometrics, Trinomics and ICF, 2018).

National social dialogue in Slovenia occurs via the national social dialogue Council (ESS), which is composed of 5 members of government, 5 trade union members, and 5 employer association members. The ESS is consulted by the government when they want to develop specific policies or projects related to the labour market, with meetings occurring almost monthly since 1994. The ESS has recently been used to discuss a draft strategy on zero emissions by 2050, and could therefore also be used to discuss more CE-related issues.

Due to a low representation of Slovenian stakeholders during Workshop 2, there was no Slovenian break-out session, and therefore no SWOT analysis was completed. This explains why the below table – which was filled-in based on one interview with a national social partner and comments from Workshop 2 – is partially incomplete.

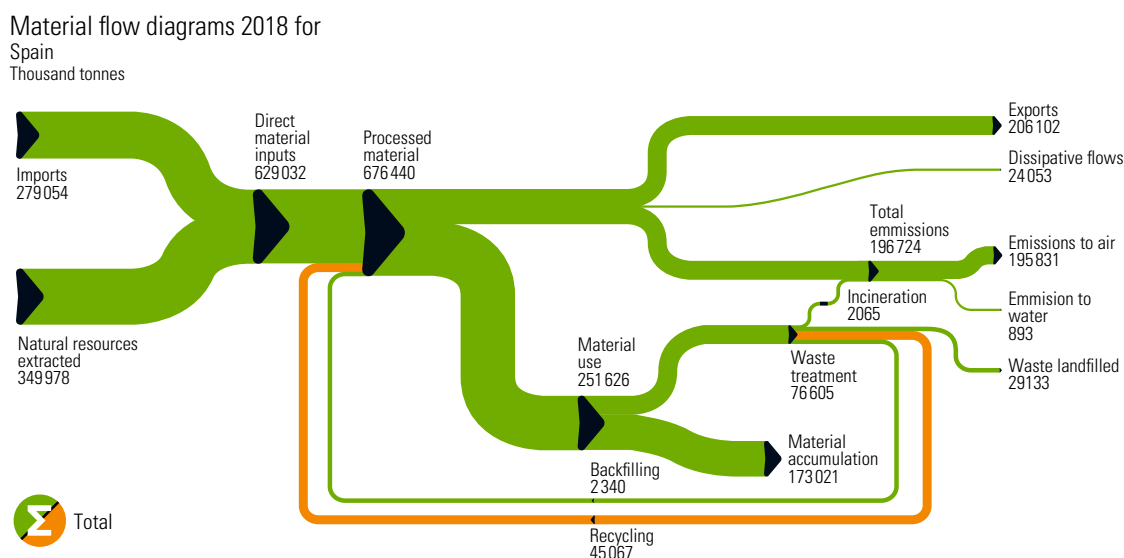
TABLE 3.11. SWOT ANALYSIS – SLOVANIA

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Awareness of sustainability issues by the population, and support for CE 2. CE is on the agenda of the government, municipalities and trade unions 	<ol style="list-style-type: none"> 1. Circularity is not yet scaled up (only implemented by some frontrunner companies) 2. Insufficient cooperation and communication, including on identifying solutions related to training
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. Make use of the ESS to discuss CE-related public policy and labour market impacts/needs 	<ol style="list-style-type: none"> 1. The national social partner interviewed said it is not thinking about the impacts of CE on employment because so many other issues linked to Covid-19 need to be addressed

8.1.12. SPAIN

The material flow in Spain (see Figure 3 13) is dominated by imports and exports. Material accumulation is an important aspect of the resource flow (approx. 170 994 tonnes). This illustrates the high activity in the construction sector, even after the end of the real estate boom. Approx. a third of the accumulated material is treated as waste, the majority of which is recycled. Only a small fraction of waste is incinerated or landfilled. The rate of municipal waste produced in Spain has decreased noticeably between 2000 and 2010 and its remained rather constant since 2010, just below 500kg per capita. The rate of recycling of municipal waste has also been slowly increasing in the past 10 years, from just below 30% in 2011 to almost 40% in 2018.

FIGURE 3 13 MATERIAL FLOW DIAGRAM FOR SPAIN IN 2018 IN KT (THOUSAND TONNES)



The number of workers employed in circular sectors in Spain has also been slowly increasing in the past several years, it's gone from about 400 000 persons in 2012 to almost 500 000 persons in 2017, which amounts to an increase from 1.75% to 2% of the workforce in the given years. However, no country-specific interviews have been carried out in relation to the Spanish situation so no further details can be provided with regards to expected impacts from circular economy transition on social aspects.

The complete overview of the SWOT analysis developed during Workshop 2, which are synthesised in section 3.6, is summarized in Table 3 12.

TABLE 3.12. SWOT ANALYSIS - SPAIN

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. Circular economy can be used to reactivate sectors recognized as needing the support of the just transition mechanism – there will be specific support for companies of this type. 	<ol style="list-style-type: none"> 1. Need to align national regulations with EU circular economy plans. The current legislation is quite rigid. 2. Need for private and public sources of financing to promote innovation and training. 3. Legal barriers exist that impede the development of the market for secondary raw materials.
OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. The development of the Circular and Low Carbon Economy represents an opportunity to change the production and consumption model as well as the business management model towards one with greater worker participation. 2. The implementation of advanced systems of extended producer responsibility in recovery and recycling will create more jobs than landfill or incineration systems. 	<ol style="list-style-type: none"> 1. It is possible that not all social groups are considered in the transition, including consideration for gender equality.
POTENTIAL JOINT ACTIONS BY SOCIAL PARTNERS	
<ol style="list-style-type: none"> 1. Promotion of measures agreed upon by all interested parties. 2. Development of a true market for secondary raw materials and circular products. 3. Participation in observatories and technical forums of the EC. 4. Ensure effective implementation of waste regulations. 	

8.2. INPUTS FROM THE FINAL CONFERENCE (AS SEPARATE DOCUMENT)

