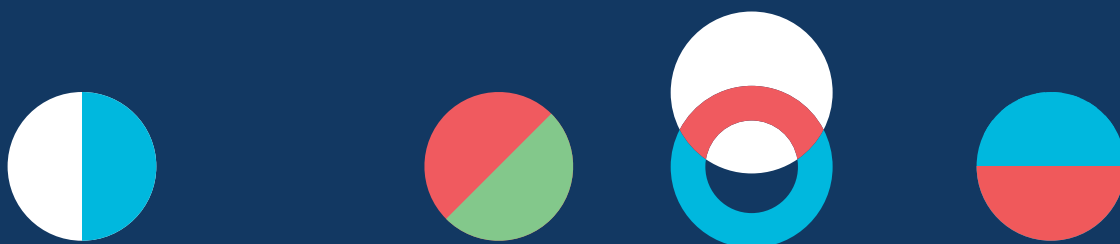
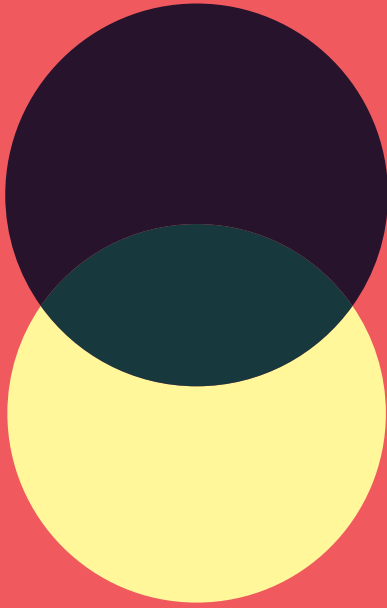
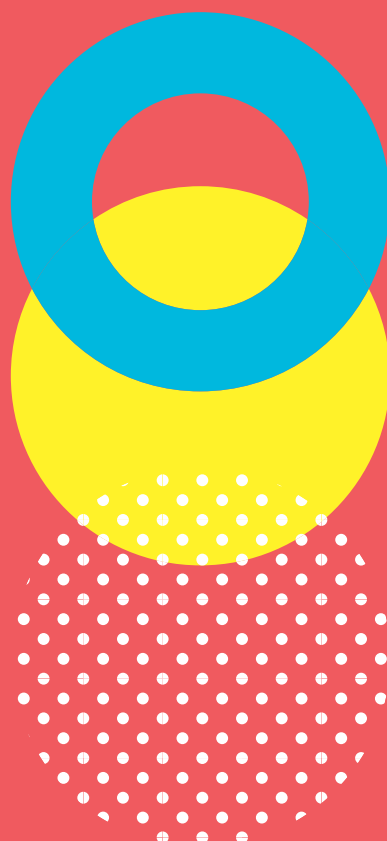


# **Safe Jobs in the Circular Economy**

## **Health and Safety in Waste and Wastewater Management**





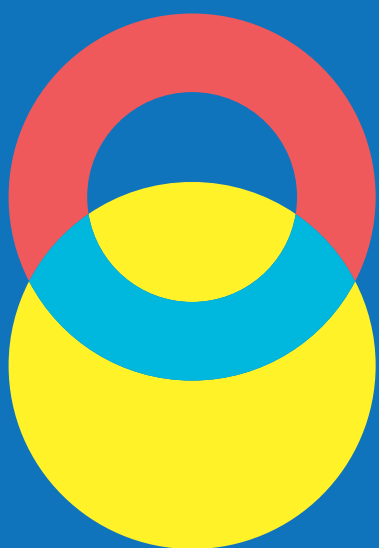


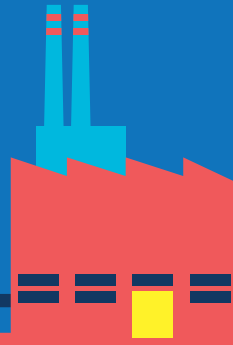


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# Preface

EPSU has a long history of linking social and green policies and arguing that fundamental change in our economic system is needed to bring an end to exploitation and achieve social justice. Change is also necessary to end the degradation of our environment and stop climate change. Public services and the workers that deliver them should play a crucial role in the transformation that puts people and our planet before corporate profits.

EPSU supports the concept of the circular economy to prevent and reduce waste, and if not possible to reuse, share, recycle and recover. This report aims to make visible the crucial role of workers in delivering this. EPSU organises workers in publicly-owned, mostly municipal as well as private companies covering collection, sorting, recycling, incineration and waste-to-heat. Many jobs in this sector are hazardous, often low paid and not covered by collective agreements, particularly in the private sector. There is also a sizeable informal waste sector in which workers are exploited.

Alas the European Commission and many governments fail to address the social dimension despite the fact that the European Pillar of Social Rights, including guaranteeing public services, should apply to this sector, as any other. Stronger collective bargaining is essential to ensure quality working conditions and decent pay and it is a key demand of EPSU that collective agreements should be respected in public contracts.

There is an opportunity to make real progress on these issues in the recovery plans being developed in response to the current pandemic and economic crisis. Above all we look to public investment and public companies to create the quality jobs that are sorely needed.

This report contributes to those discussions and we thank the author, Vera Weghmann (PSI-RU, University of Greenwich) and our affiliates and staff who provided input.



Enjoy reading.

**Jan Willem Goudriaan**  
*EPSU General Secretary*

# Executive summary

The circular economy promises a move away from a linear model of growth (extract, make, dispose) to a sustainable model (recycle, reuse, remake, share). This report, commissioned by the European Public Service Union (EPSU), focusses on the role of labour in the transition to a circular economy and, in particular, the health and safety of workers operating waste and wastewater management systems. The key points are:

## 1) Make labour in the circular economy visible

The global Covid-19 pandemic has made the labour behind essential services visible. We can no longer pretend that the circular economy operates itself but need to recognise the crucial role of the workers involved. Currently, many jobs in the waste and re-use sector are hazardous, unpleasant and put the health and safety of workers at risk – and on top of that they are low paid and with few employment rights. The informal waste sector makes a significant contribution to the circular economy in Europe and invisible labour is often performed by very vulnerable and marginalised groups of workers. Labour needs to be made visible and formalised, so that the workers can be properly remunerated, and their health and safety protected.

## 2) There is a severe lack of research on the health and safety of circular economy workers

The research gap is exacerbated by the fact that a number of recycling and re-use activities take place in the informal sector and/or have been exported to developing countries. There is a particular lack of knowledge about the working conditions and health and safety of workers in the recycling and re-use sectors – key pillars of the circular economy.

Any study of the labour market in the circular economy should consider its geo-political (where do we deal with waste) and socio-political (who is dealing with waste) dimensions. There is much hype around green jobs creation. Yet, rather than speculating on the number of jobs, the circular economy needs secure and decent work.

## 3) The EU's circular economy policies currently ignore the health and safety of workers

In the EU's March 2020 Circular Economy Action Plan the workers that it relies upon are not even mentioned, let alone any concern for their health and safety. If Europe truly wants to extend its circular economy activities, policies and legislation need to ensure safe and decent jobs. For example, the Action Plan promises to revise existing legislation to make both the production and the consumption of goods more ethical by introducing 'circular thinking'. However, the workers on which the circular economy relies are - yet again - ignored in the principles that guide the EU's sustainable product policy legislative initiative. Yet, some health and safety risks for the workers that dismantle products and make them reusable or recyclable can be addressed at the design and production stage. The EU could add to its sustainability principles the commitment

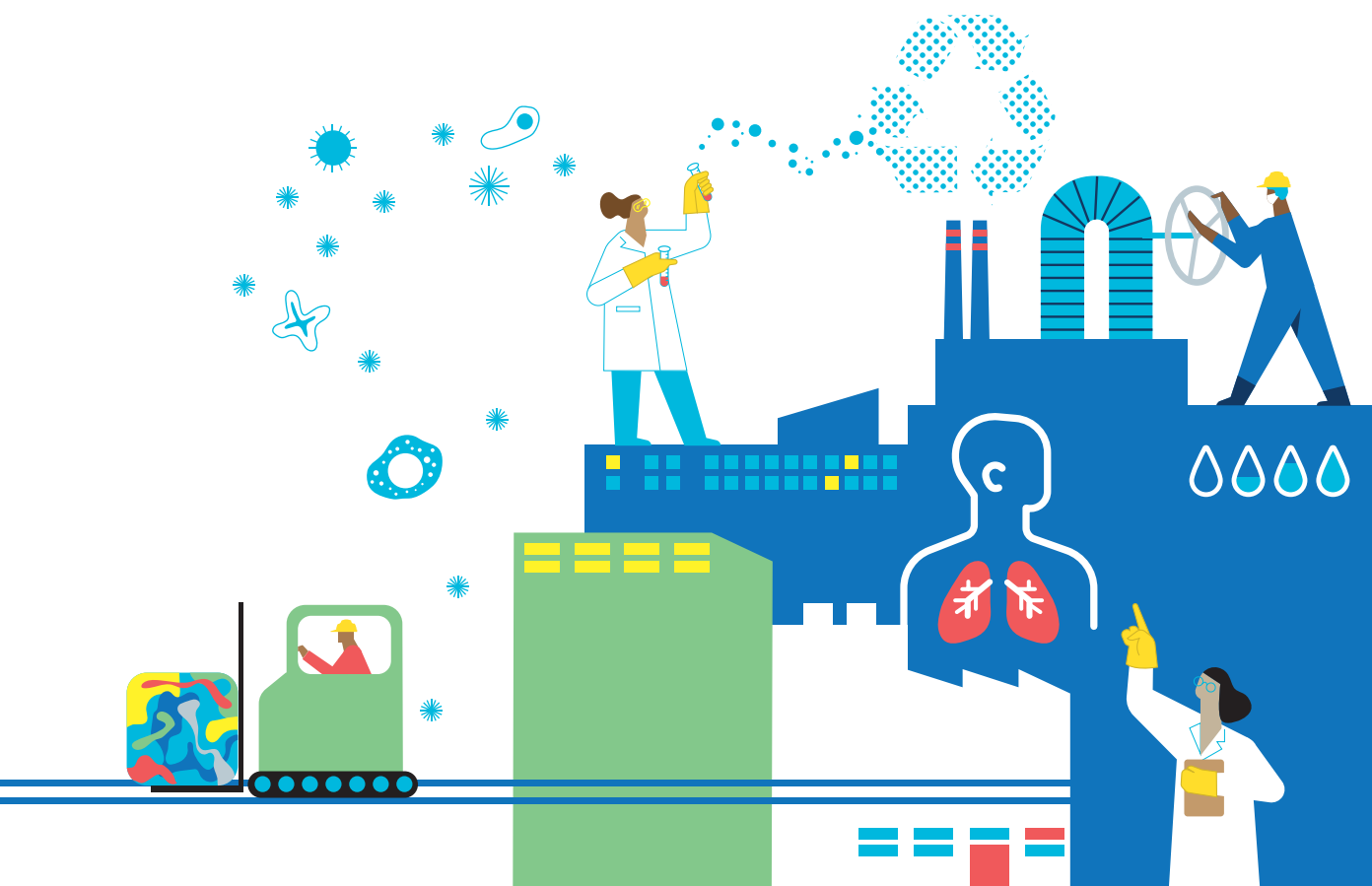


to integrate the health and safety of circular economy workers into the design phase. In other words, to not only advocate eco-design but also fair-design. Moreover, from the consumer side, the EU should not only have an Ecolabel but also a Fairlabel.

#### 4) EU policies need to incorporate risk assessments

An example of the EU's disregard for waste workers' health and safety in the formulation of policies can be found in the construction and demolition waste (CDW) sector - the biggest waste stream in Europe. Expanding the recycling activities in this sector is particularly important. However, a recent (2018) study commissioned by the European Commission which aims to foster the development of the necessary CDW recycling infrastructure does not even mention the workers that would operate these new plants, let alone pay attention to their health and safety.<sup>1</sup> Proper risk assessments should be carried out and the relevant trade unions consulted to ensure that the EU increases its CDW recycling capacity in a way that protects workers and the environment.

The Covid-19 pandemic has amplified the health and safety threats for sanitation workers. Proper risk assessments should be carried out with the consultation of the relevant trade unions to ensure that sewage workers' health is protected. The high exposure to dangerous biological agents is a serious health and safety threat and particular precautions should be put in place to protect sewage workers from the pandemic.



## 5) Waste prevention measures are often at odds with the circular economy

Policy proposals, such as the EU's March 2020 Circular Economy Action Plan, often conflate waste prevention with recycling. However, the circular economy is supposed to be built on a waste hierarchy, whereby waste prevention is distinguished from and prioritised to recycling. In reality, circular economy activities are often at odds with waste prevention because there is profit in waste, as well as in the increased production and consumption that is enabled by circular economy activities. Yet there is no profit in the avoidance of waste, conversely, it costs national and local governments to subsidise and carry out waste prevention and re-use activities.

## 6) A holistic approach to circular waste management has to be based on public ownership

Often different waste treatment measures compete with each other. For example, Waste-to-Energy (WtE) plants require high investment and thus private providers operating the plants usually require municipalities to commit to continuous waste streams for several decades – often up to 50 years. Competition between different waste treatments operated by different private providers results in ineffective waste management and creates a cycle promoting a continuous need for waste. To prevent this waste cycle a holistic waste management approach is needed. Public ownership and control are key to ensure that profit is not prioritised over environmental concerns.

To expand its recycling capacity waste management needs to be swift and effective, as delays increase contamination and make the waste unrecyclable. Therefore, frequent municipal waste collection is crucial, which is often at odds with privatisation as the providers aim to reduce costs by collecting the waste as least often as they can get away with.

A best practice example can be found in Ljubljana, Slovenia, which became the first and only zero waste capital in Europe. It is a publicly funded and publicly operated waste management system where waste treatment goes hand in hand with waste avoidance initiatives and a municipal waste collection system that incentivises accurate waste sorting for recycling at home.



## 7) Europe's recycling capacity has to be increased

So far, the EU has exported a large proportion of its recyclable waste, usually to countries with lower labour and environmental standards. Yet, long shipment periods increase the risk from contamination making the waste more dangerous for workers and decreasing its recyclability and re-usability. Even before China and then other Asian countries tightened the rules for importing recyclable waste from 2018 onwards, only 10 per cent of the world's plastic waste was recycled. The increased waste import restrictions in many Asian countries have further decreased global recycling while at the same time increasing the illegal waste trade.

We cannot simply export our waste problem. Europe needs to invest in more local and regional recycling plants in order to avoid the long storage periods that increase contamination. These plants need to be built and operated with the health and safety of workers in mind.

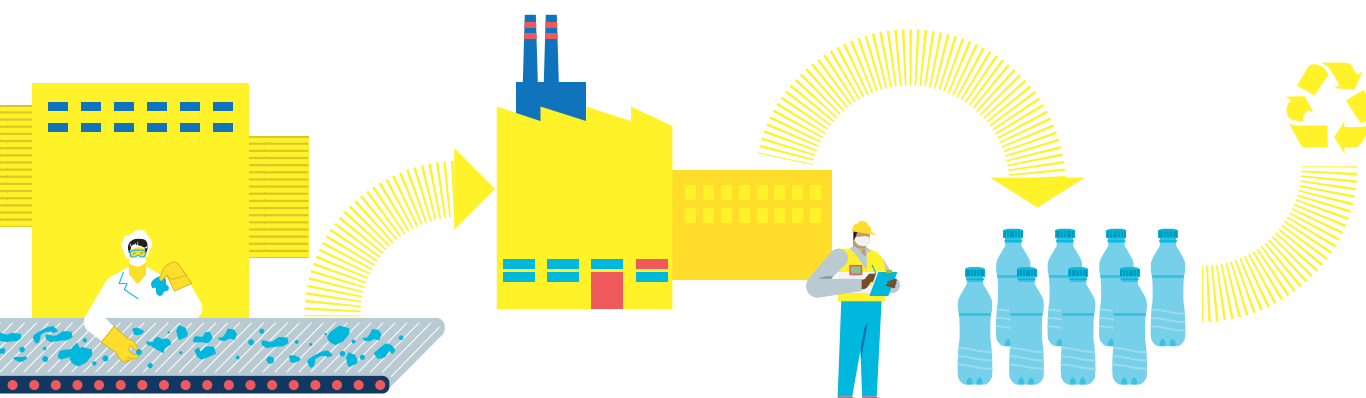
## 8) Creating a circular economy is a trade union issue

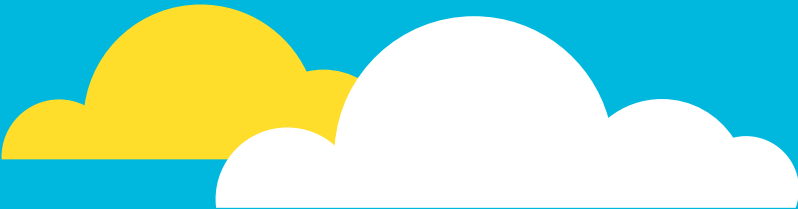
The move to a circular economy should be negotiated with trade unions to guarantee that the health and safety of workers are protected. To that end, trade union safety representatives can be elected to check if health and safety regulations are followed and if working conditions are adequate.

Trade unions have a role to play in forging alliances between formal and informal workers that result in better and safer working conditions for all waste workers while expanding circular economy activities. In Paris, France a support system has been developed between the public authority, formal workers and informal waste recyclers.

Automation processes have the potential to create safer work environments for workers but changes to work should be negotiated with trade unions to ensure that automation does not penalise 'unskilled' workers and may need to involve wider changes to the organisation of work.

In many European country's workers have the right to stop working if their health and safety is in danger. For example, in the UK section 44 of the 1996 Employment Rights Act gives workers the right to walk out of their workplace if they reasonably believe that their health and safety is at serious and imminent danger.<sup>2</sup> As the coronavirus spreads more and more workers across the world have taken action on health and safety grounds.



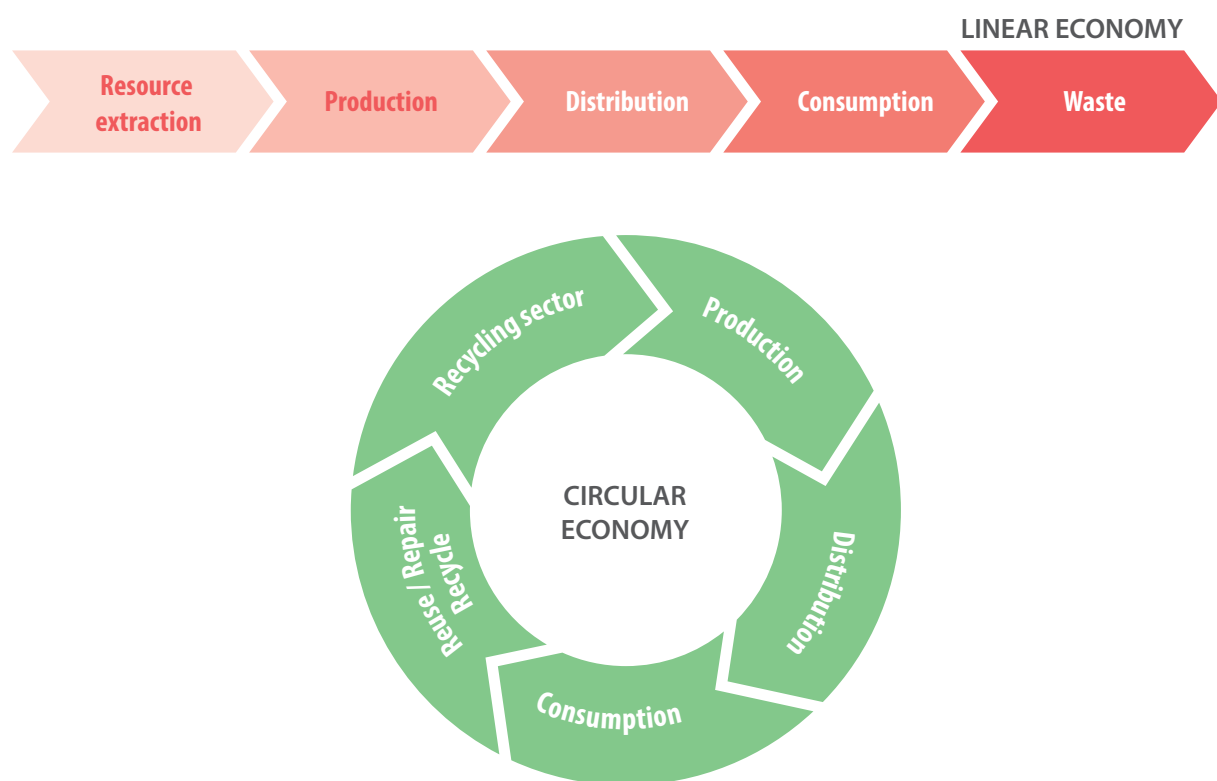


# 1. Introduction

The circular economy proposes a shift in our economic thinking and practices that could radically alter the way production and consumption is organised. Waste is no longer seen as something we need to get rid of but as a resource.

School children across the globe have highlighted that we are facing a climate emergency. Our current global economic system is unsustainable: continuous economic growth and thus endless consumption means ever-increasing waste. Waste that is buried, dumped out at sea or turned into ash pollutes the environment and creates the need for the extraction of further raw materials. The circular economy promises to overcome that by moving away from a throw-away culture to a sustainable economy that moves from a linear (extract, make, dispose) to a circular economy (recycle, reuse, remake, share) (see Figure 1). Yet, to efficiently address the waste crisis, waste prevention rather than just waste re-use is needed and that can only be achieved if production and consumption levels go down. In other words, a complete re-thinking of our economy and in particular a shift away from the economic growth model is required.

**FIGURE 1:** The linear economy and the circular economy



Source: UNEP 2018

Creating a circular economy would not only save precious resources and energy, inevitably it has implications for workers.<sup>3</sup> A circular economy can only truly be sustainable if the health and safety of the workers involved in it are prioritised. Expanding recycling, repair and reuse activities are key for the transition towards a circular economy, however, some of these are high-risk jobs. Threatening the health and safety of the workers that make resources re-usable can not only have devastating consequences for the individual, but it can expose our whole society to health and safety risks. In order to reach the full circular potential of our economy we need to understand how to ensure safe working conditions for those who make it work. Yet, as the World Health Organisation (WHO) has pointed out, to date there has been little research done on the health impacts of a transition to a circular economy – especially in relation to chemicals, water reuse, electrical and electronic waste, and distributional effects.<sup>4</sup> When health and safety aspects are considered in reports and policy documents on the circular economy they usually concern only product users.<sup>5</sup> Shockingly little attention has been paid to the health and safety of the workers that operate the circular economy. Consequently, there is a potential danger that circular economy policies and practices are developed without risk assessments that take workers' health into account.<sup>6</sup>

In the time of the Covid-19 pandemic that clearly demonstrated our society's dependency on essential workers, the words of Martin Luther King, addressing the sanitation workers on strike on 18 March 1968 in Memphis just two weeks before his assassination seem truer than ever:

"One day, our society will come to respect the sanitation worker if it is to survive, for the person who picks up our garbage, in the final analysis, is as significant as the physician, for if he doesn't do his job, diseases are rampant. All labour has dignity."<sup>7</sup>

This report, which has been commissioned by the European Public Service Union (EPSU), aims to make a contribution to address this research gap by:

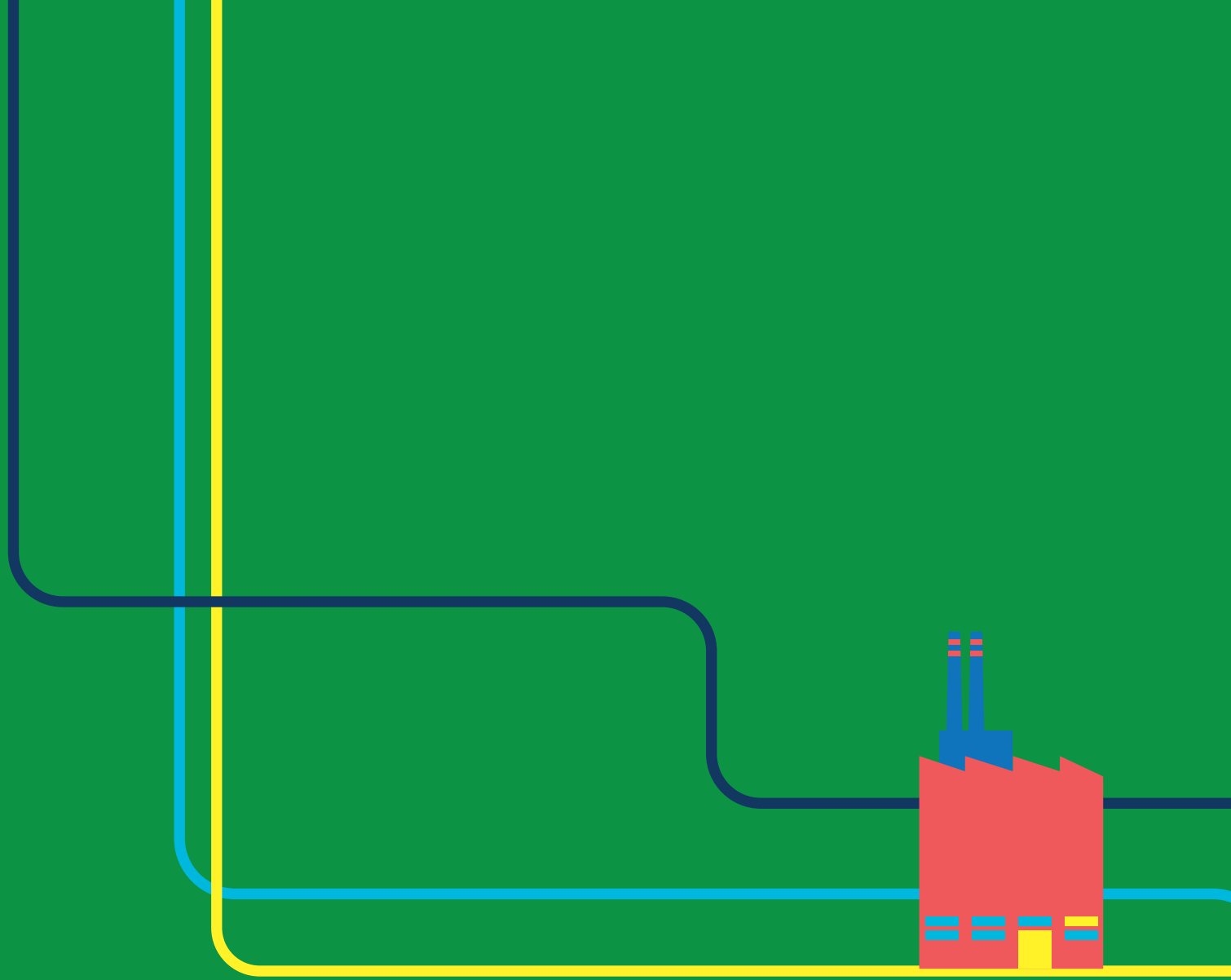
- providing an overview of the circular economy policies and legislations in Europe and their (lack of) engagement with workers' health and safety;
- identifying the main health and safety risks for workers operating circular waste and wastewater management systems;
- outlining the main global health and safety concerns that need to be considered when further implementing circular economy systems; and
- setting out policy recommendations to facilitate good and safe jobs in the circular economy.

The report follows a report from 2018, *Waste Management in Europe. Good Jobs in the Circular Economy?*, which was also commissioned by EPSU. That report looked at employment and employment trends in the circular economy with a particular focus on waste management. The report identified a research gap on the working conditions of those employed in the waste management sector and the wider circular economy.

The structure of this report is as follows: this introduction is followed by a brief explanation about the methodology and section three provides an overview of the circular economy in general. Section four then engages specifically with the waste and wastewater management sector,

which according to the European Commission is the 'building block of the circular economy'. Section five widens the lens by taking a global view of the circular economy, which has significant implications for workers and product users in Europe. The fate of waste and, indeed, how much of a discarded object is reusable is already decided in the design phase of the product. A lot of health and safety risks for workers, especially when dealing with hazardous waste, can be prevented by adequate product design. This section also highlights that the introduction of the circular economy in Europe has only been possible by exporting large proportions of waste to other countries, usually with lower environmental standards and weaker worker protection. In the final section the report outlines what needs to be considered in the transition to a circular economy based on decent and safe employment conditions for workers operating it. The report concludes by highlighting key findings and setting out policy recommendations.







## 2. Methodology

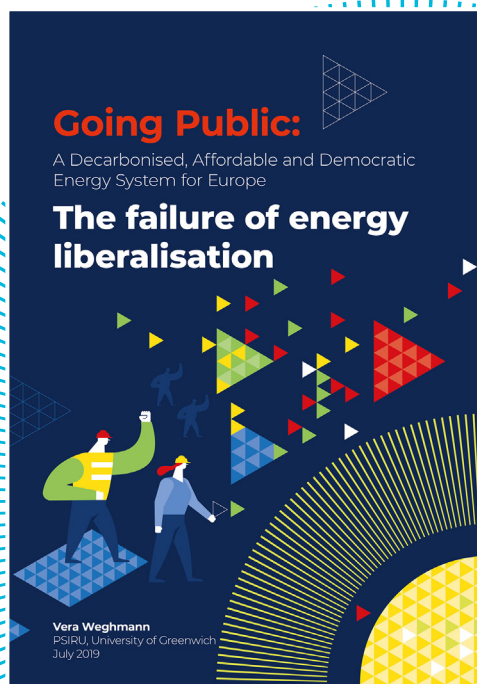
Original information and materials were collected through an indicative survey with health and safety representatives of EPSU affiliated trade unions in five EU countries, namely Norway, Bulgaria, Netherlands, Germany and Spain. The aim of the survey is to complement desk research and ensure that the voices of workers in the circular economy and their unions are reflected in the final report. The responses were used to guide the desk research. The main indications from the survey were that most waste workers seem to be very aware that their jobs regularly put their health and safety at risk. The exposure to hazardous substances and physical stress were identified as key health and safety concerns. For some employees of private waste companies, mental stress and chronic understaffing also were of great concern. Following on from the survey and initial desk research, there are testimonies from workers in Poland, Czech Republic, and Norway.

The report also draws on existing reports by Vera Wegmann, *Waste Management in Europe. Good Jobs in the Circular Economy?*, commissioned by EPSU; a jointly written report with Sandra Van Niekerk, on waste management in Africa and Arab countries commissioned by Public Services International (PSI) and a guide on remunicipalisation for workers and trade unions also commissioned by PSI.

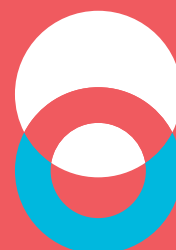
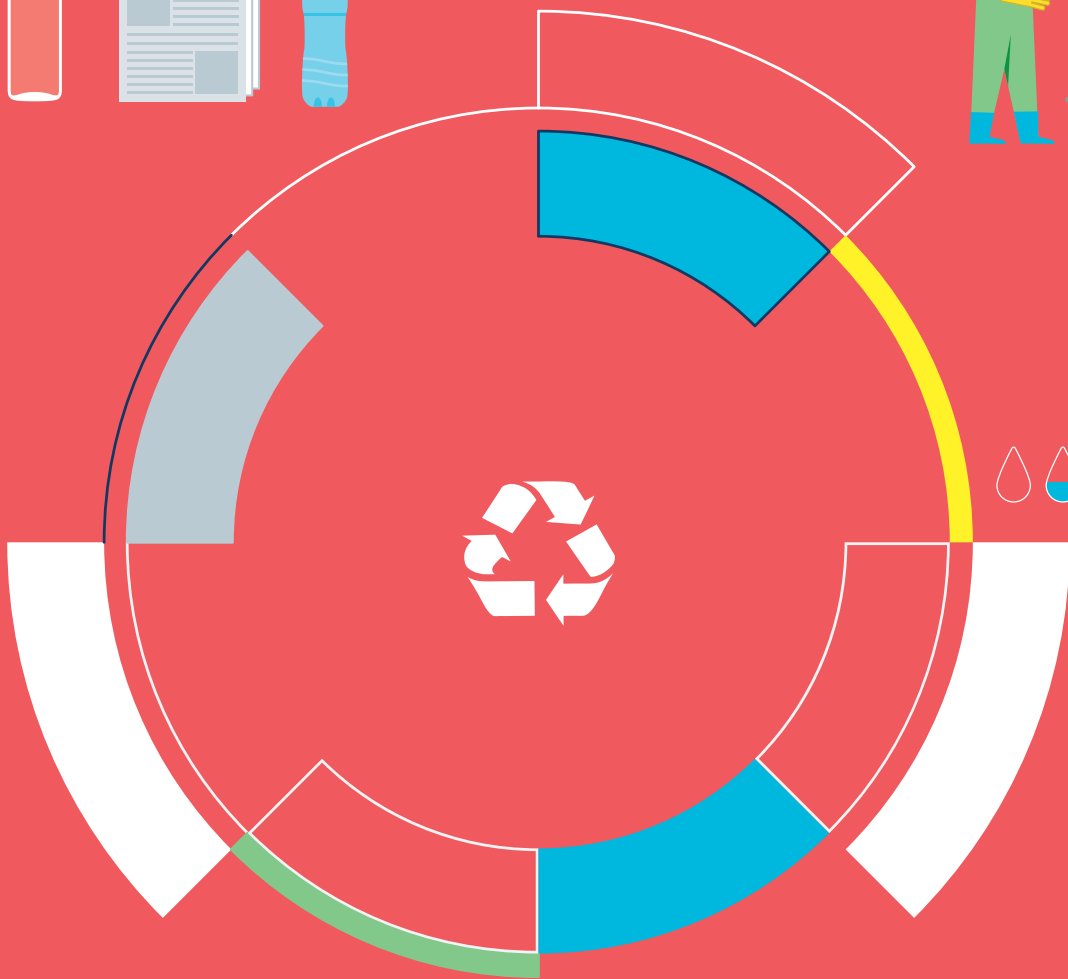
**Please click on the following link to read the above report:**



<https://bit.ly/3aYeyKB>



<https://bit.ly/31ArsLX>



### 3. The circular economy

A transition to a circular economy means a radical alteration in the logic of business from a producer as well as from a consumer perspective. The circular economy aims to fundamentally change how we think about waste: treating it as a resource rather than something we just want to get rid of. The ambition is to maintain products, materials and resources for as long as possible by keeping them in the product cycle thus minimising the generation of waste. The idea is that the more that is re-used and the less that is discarded, then fewer raw materials will need to be extracted.<sup>8</sup> The concept promises to keep production and consumption up while being resource efficient and consuming and producing within the means of the planet. In other words, it is a new green-growth strategy that is in line with, rather than departs from, the logic of growth-driven, ever-expanding capitalism.<sup>9</sup> However, sustainable growth is a contradiction in itself. Waste is an inherent and inevitable feature of capitalist economies.<sup>10</sup> In order to produce and consume within the means of our planet, production and consumption, and thus waste, need to be reduced and not increased. As such, rather than thinking how creating a circular economy offers new opportunities for capitalist expansion, bold policies are needed that diverge from the economic growth model and place sustainability and well-being at its centre.

Not only policy makers but also the world's leading multinational companies appear enthusiastic about the circular economy. In our previous report, *Waste Management in Europe. Good Jobs in the Circular Economy?*, we showed that companies and business leaders have lobbied hard for the circular economy on national and international platforms. For example, at the World Economic Forum (WEF) in Davos, an annual event where international corporations and consultants meet with governments and international organisations to develop and promote economic policy recommendations, the circular economy became a flagship policy. These lobby activities come as no surprise when considering the huge business opportunities that stem from circular economy systems. The circular economy is an opportunity for companies to reinforce their market position. Research on this matter has shown how companies, such as Apple, brand itself as ethical and environmentally responsible and become certified circular companies, so that the consumer enjoys a guilt-free shopping experience. People are thus encouraged to permanently consume more and get the latest products on the market.<sup>11</sup> As such the circular economy is a "carrot" approach to stimulating consumption based on the illusion that zero-waste is possible. It goes hand-in-hand with another – more "stick" like – consumption boosting strategy of planned obsolescence, which means to purposefully design products with a short life span to ensure people buy new products frequently.<sup>12</sup> For example, electronic companies such as Apple and Samsung became known for deliberately engineering the artificial lifetime of products to boost consumption.<sup>13 14</sup>

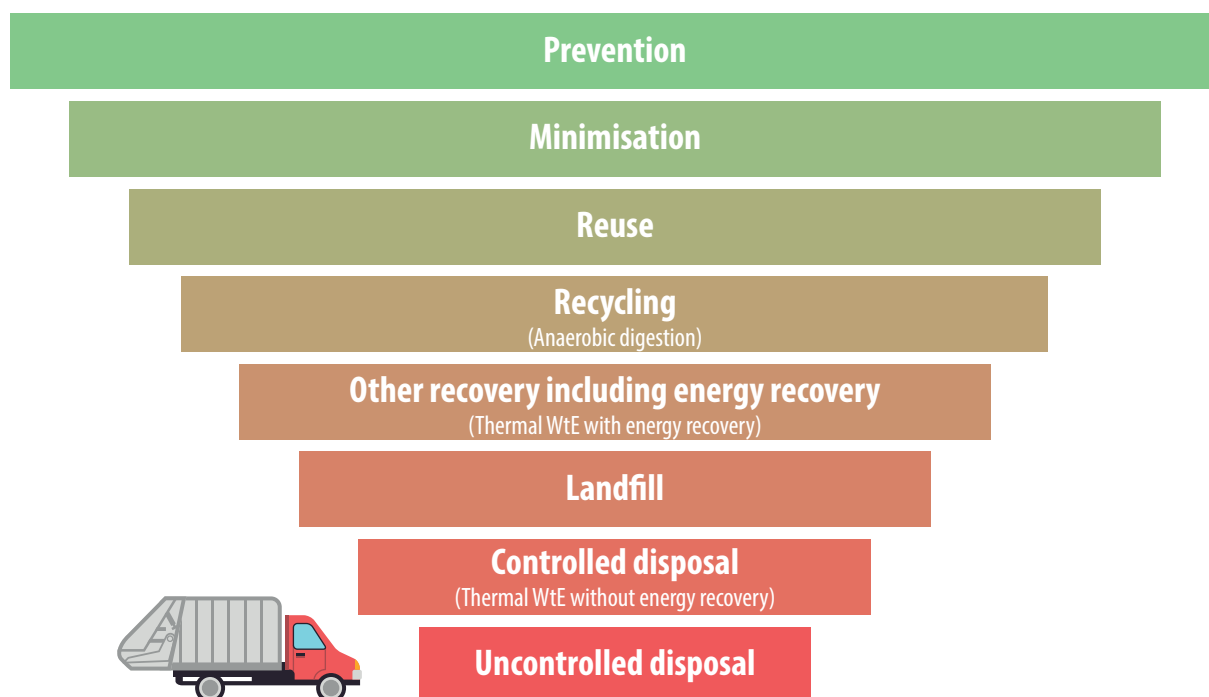
In the waste management sector – the pillar of the circular economy – its profitability becomes particularly evident. Treating waste as a resource means that companies can profit twice from the same material: disposing of it and selling it as a resource to producers. There is increasing competition over the value of waste at local, national and international level. With a rising awareness about the finiteness of raw materials and the many problems with extractivism – the

extraction of more and more raw materials to feed into the world economy – the struggle over resources has found a new realm: the scramble for waste.

The marketing potential of the circular economy becomes clearly visible in the branding of Suez, one of biggest waste and wastewater management companies in Europe. Suez markets itself as “a leader in the circular economy”.<sup>15</sup> Branding themselves as environmentally friendly might also be part of the private sector’s fightback against the trend towards remunicipalisation - the return of privately-operated public services back into public ownership - in waste- and wastewater management in Europe as well as globally (see Box 3).<sup>16</sup> In the energy sector in particular,<sup>17</sup> but also in waste management, environmental reasons have been decisive in local authorities’ decisions in recent years to insource public services.<sup>18</sup>

All too often a circular economy approach to waste management is reduced to recycling activities. This becomes especially evident when examining how the circular economy is measured. In principle, the circular economy is about much more than recycling. In the EU the Circular Economy Strategy defines the role of waste management based on a waste hierarchy, which lists prevention at the top (most preferable), then runs through reuse, recycling, recovery and with disposal at the bottom (least preferable) (see Figure 2). However, the circular economy is currently solely measured in terms of recycling and resource recovery. In 2017 (the most recent data to date) the circularity rate, that is the share of material resources used in the EU which came from recycled products and recovered materials, was 11.2 per cent. There are huge discrepancies in the circularity rate between different EU member states. In 2017, the Netherlands achieved the highest circularity rate with almost 30 per cent, followed by France with over 18 per cent and

**FIGURE 2: The Waste Hierarchy**



Source: UNEP

Belgium with over 17 percent. The lowest rate was recorded in Ireland 1.6 per cent, followed by Portugal and Romania which both achieved less than 2 per cent and Cyprus and Finland which both managed to achieve just over 2.2 per cent.<sup>19</sup>

While waste prevention is the highest priority in the waste hierarchy (see Figure 2) on which the EU's Circular Economy Strategy is based, it is not included in the measurements – for obvious reasons – it is hard to measure what is not there.<sup>20</sup> The same is true for the extension of the sharing economy (see section 5.4). None of the available indicators can assess the preservation of functions other than materials and products.<sup>21</sup>

### **Policy recommendation: From a circular economy to a fair and sustainable economy**



To produce and consume within the means of our planet we need to be resource efficient, which means first and foremost a reduction of waste. The best way to prevent waste is to produce and consume less. Put differently, to manage consumption and production in a way that is socially just, environmentally sustainable and fair on the workers that operate our economy the EU needs to diverge from an economic model based on growth.

### **Box 1: A New Circular Economy Action Plan**

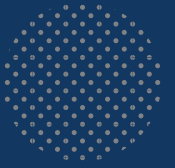


In March 2020 the European Commission launched *A New Circular Economy Action Plan*, which became one of the main pillars of the European Green Deal – Europe's new green growth agenda.

The new Circular Economy Action plan aims to

- make sustainable products the norm in the EU;
- empower consumers and public buyers;
- focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients;
- ensure less waste;
- make circularity work for people, regions and cities; and
- lead global efforts on circular economy.<sup>22</sup>

It is striking that the EU promotes processes that ensure that the resources used are kept in the EU economy for as long as possible without paying any attention to the workers who operate the circular economy. The new EU Circular Economy Action Plan only mentions workers once and that is in conjunction with the expected job creation that is assumed to be facilitated by a transition towards a circular economy if the workers acquire the skills that are needed.<sup>23</sup> The health and safety risks for workers face are not considered at all in the EU's circular economy policies. However, to enable the transition towards the circular economy the EU's policies need to go beyond speculation about the quantity of jobs and start to look into the quality of the jobs.

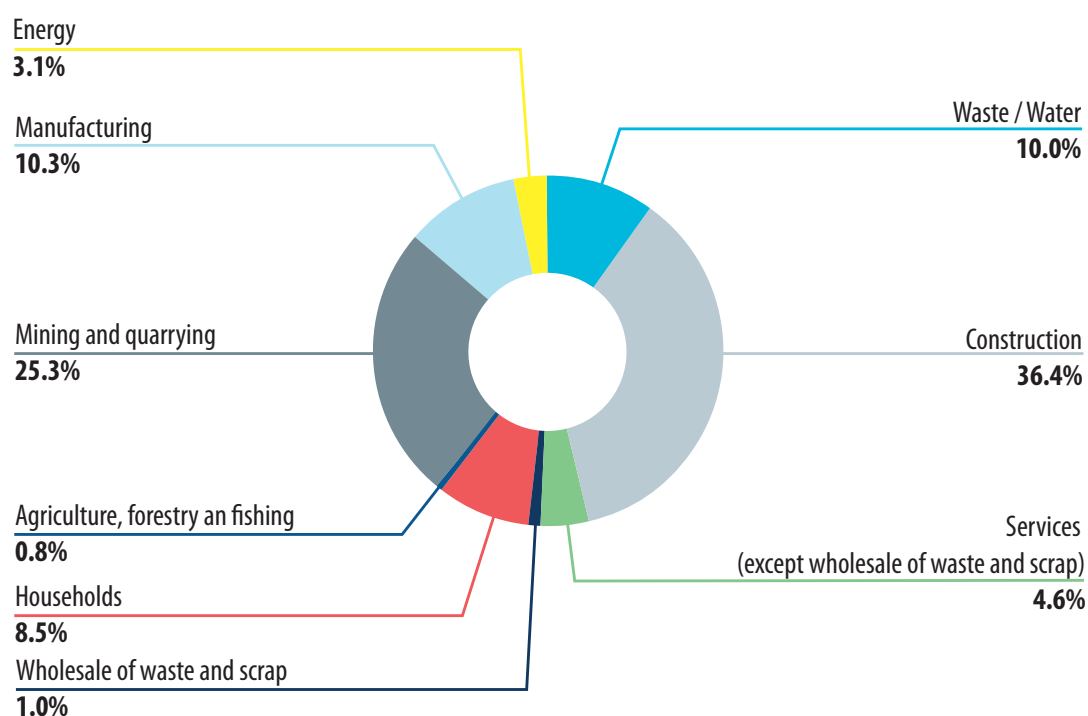


## 4. Waste and wastewater management in Europe

### 4.1 Increasing amounts of waste

Waste in Europe is increasing in terms of both the overall quantity and the amount of waste generated on average per person.<sup>24</sup> In 2016, the total waste generated in the EU amounted to 2,538 million tonnes. This is a more than three per cent increase between 2010 and 2016.<sup>25</sup> This increase is important to keep in mind as often articles on waste in Europe only talk about municipal waste, which is the waste generated on a household level. The amount of municipal waste has been steadily falling – which is good news – but one should not forget that it only accounts for around 8 per cent of total waste (see Figure 3). Most waste is generated in construction, which contributed over 36 per cent of total waste in 2016, followed by mining and quarrying representing over a quarter. Manufacturing contributes 10 per cent of total waste while waste and water services contribute 10 per cent (see Figure 3).

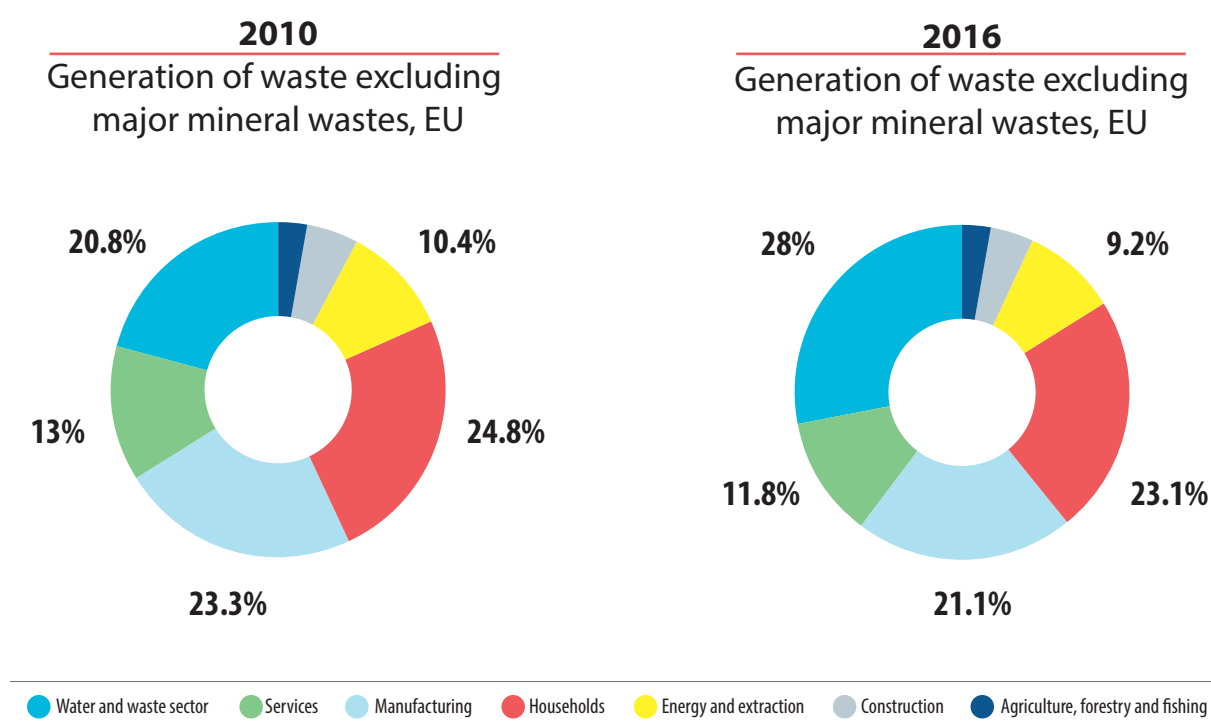
**FIGURE 3:** Generation of waste, excluding major mineral wastes, EU



Source: Eurostat (env-wasgen)

Waste generated from waste and water management activities is increasing fast – by 56 per cent between 2010 and 2016 (almost 82 million tonnes).<sup>26</sup> This is mostly related to more complex waste management methods and thus the increase of secondary waste that is produced through recycling and energy-recovery activities.<sup>27</sup> Its significance becomes most evident when looking at the data on overall waste generated, excluding major mineral wastes (see Figure 4). Total waste consists of about 65 per cent of mineral waste, which is treated by the EU as a separate waste management sector due to its large potential for material use.<sup>28</sup> The exponential rise in waste becomes even more obvious when looking at the waste data excluding major mineral waste – it increased by over 5 per cent between 2010 and 2016.<sup>29</sup> The significant rise of waste from waste clearly demonstrates that zero-waste is an illusion. A circular economy never means a 100 per cent re-use.

**FIGURE 4: Generation of waste excluding major mineral wastes, EU**



Source: Eurostat



## 4.2 Health and safety aspects in waste and wastewater management

Workers in waste management are very aware of the risks they are exposed to. This is reflected in the data from the European Working Conditions Survey (EWCS) 2010. The survey found that almost 37 per cent of waste workers agree with the statement 'my health and safety is at risk because of my work' and almost 34 per cent feel that their health is negatively affected by their work. This is a higher percentage than for all other sectors and it is even higher than in the industry sector.

The most recent European Working Conditions Survey (EWCS) from 2017 does not deal specifically with waste management, but it warns in particular about a growing risk of workers being exposed to biological and chemical risks, for example by handling or being in direct contact with materials which could be infectious, such as waste.<sup>30</sup> A systematic review of the published literature on hazards to health, biological effects and occupational illnesses for workers in the waste and recycling sector in the UK found that the main risks were heavy manual handling and exposure to bio-aerosols (airborne particles that contribute in indoor air pollution), heavy metals and organic pollutants.<sup>31</sup> Over recent years we have also seen an increase of fatal accidents in waste and wastewater management in Europe. Between 2010 and 2017, the number of cases increased by over seven per cent in water supply; sewerage, waste management and remediation activities.<sup>32</sup>

In Europe, the European Framework Directive on Safety and Health at Work guarantees minimum safety and health requirements for all workers (see Box 2). Yet there is a severe lack of research on the health and safety risks in waste management. This knowledge gap not only creates a barrier to ensuring that the Directive on Safety and Health at Work is properly enforced. To protect workers and create safe working conditions for these essential services, it is crucial to gain a clearer picture of the main health and safety risks, so that risk assessments can be carried out accordingly.

Research to date shows that waste collection, waste sorting and recycling activities pose risks of infection from blood-borne viruses as workers are exposed to sharp objects, for example, needles, glass and metal tins. Another key risk originates from biological agents. Between 2015 and 2017, the European Agency for Safety and Health at Work (EU-OSHA) carried out research to address the lack of knowledge and awareness of exposure to biological agents. The research found that people in the waste management and wastewater treatment sectors are at a high risk of exposure to biological agents (see Table 1). Moreover, the data from the EWCS 2010 shows that the exposure is very high. For example, nine per cent of the workers in waste management state that they are exposed to smoke, fumes and dust 'all the time' (see Graph 9). A sector-wide analysis including empirical and statistical data would be needed to fully grasp the health and safety risks in waste management and thus to enable a sustainable transition to a circular economy that takes account of the workers who operate it. While this report cannot fill this research gap, the following sections will outline the main health and safety risks for various waste streams as well as for different waste treatment methods. Where possible, policy recommendations are outlined.

**TABLE 1: Biological agents and related diseases in the waste management sector**

BIOLOGICAL AGENT	TYPE OF BIOLOGICAL AGENT	OCCUPATION	HEALTH EFFECT
<b>Actinomycetes</b>	Bacteria	Composting site worker	Actinomycosis
<b>Acinetobacter</b>	Bacteria	Waste worker	-
<b>Brucella spp.</b>	Bacteria	Waste worker	Brucellosis
<b>Campylobacter</b>	Bacteria	Waste worker	Campylobacter infection
<b>Escherichia coli</b>	Bacteria	Waste worker	Colibacteriosis
<b>Legionella spp.</b>	Bacteria	Biological treatment plant worker, Waste worker, Wastewater treatment worker	Legionellosis
<b>Mycobacterium</b>	Bacteria	Waste worker	Tuberculosis
<b>Salmonella</b>	Bacteria	Waste worker	Salmonellosis
<b>Staphylococcus</b>	Bacteria	Waste worker	-
<b>Treponema pallidum</b>	Bacteria	Waste worker	Syphilis
<b>Aspergillus</b>	Fungi	Waste worker	Mycotic keratitis (cornea infection)
<b>Cryptococcus</b>	Fungi	Waste worker	Cryptococcosis
<b>Indoor moulds, fungi (mixture)</b>	Fungi (mixture)	Waste worker	Sick building syndrome, asthma, upper respiratory diseases, infections, coughs, headaches and flu-like symptoms, allergic diseases, and irritation of the nose, throat, eyes and skin
<b>Geotrichum</b>	Fungi	Waste worker	-
<b>Rhodotorula</b>	Fungi	Waste worker	-
<b>Trichoderma</b>	Fungi	Waste worker	-
<b>Hepatitis A virus Hepatitis B virus Hepatitis C virus</b>	Virus	Waste worker	Hepatitis A Hepatitis B Hepatitis C
<b>HIV</b>	Virus	Waste worker	Aids
<b>Toxoplasma gondii</b>	Parasites	Waste worker	Toxoplasmosis

Source: (EU-OSHA, 2019).<sup>33</sup>



## Box 2: The OSH Framework Directive

The European Framework Directive on Safety and Health at Work (Directive 89/391 EEC) adopted in 1989 guarantees minimum safety and health requirements throughout Europe. It applies to all sectors of activity, both public and private.

The OSH directive sets out principles concerning

- the prevention of risks,
- the protection of safety and health,
- the assessment of risks,
- the elimination of risks and accident factors,
- the informing, consultation and balanced participation and training of workers and their representatives.

Since 1992 the OSH directive became national law in the EU. On the basis of this “Framework Directive” more specific directives were adopted.



## Policy recommendation:

The severe lack of research on the health and safety risks in waste management needs to be addressed so that policies can be formulated that ensure decent and safe working conditions for the workers that operate the circular economy.

## 4.3 Different types of waste and health and safety

### 4.3.1 Construction and demolition waste (CDW)

Construction and demolition waste (CDW) is waste that occurs from the construction or demolition of buildings and infrastructure as well as road planning and maintenance. The exact definition of CDW varies between different EU member states and hence an exact comparison is very difficult. Yet what is clear is that CDW amounts to by far the biggest waste stream in the EU by weight. Around one third of the total waste generated in the EU stems from construction and demolition. This amounts to over 800 million tonnes per year. CDW consists of numerous materials, including concrete, bricks, gypsum, wood, glass, metals, plastic, solvents, asbestos and excavated soil. The circular economy potential in this sector is very high, since some of its components have a high resource value.<sup>34</sup> The 2008 Waste Framework Directive set a 70 per cent target for re-use, recycling and other material recovery for this sector by 2020.<sup>35</sup> However, the actual recycling and recovery rates vary greatly between member states, with some managing to recycle and re-use over 90 per cent while others only achieve 10 per cent (See Figure 5). Recycling in the CDW stream is especially important because, if not separated at source, CDW can contain hazardous waste, the combination of which can pose particular risks to the envi-

ronment and can hamper recycling. Common hazardous materials found in CDW are, among others, tar, radioactive waste, lead and electrical components containing mercury.<sup>36</sup>

The EU aims to make particular progress in the recycling and re-use of this waste stream. In order to be recyclable CDW materials need to be separated and treated,<sup>37</sup> yet EU plans do not even mention the workers carrying out these important tasks, let alone consider their health and safety.<sup>38</sup> A recent (2018) study commissioned by the European Commission which aims to foster the development of the necessary CDW recycling infrastructure pays no attention at all to workers' health and safety.<sup>39</sup> This suggests that when elaborating the business case for new CDW recycling facilities the EU completely disregards the role and needs of workers.

However, in a previous report from 2016,<sup>40</sup> the European Commission did outline some non-binding policy guidelines to ensure appropriate health and safety for workers in the CDW sector, such that:

- a) Recycling plants should fulfil all requirements related to environmental, health and workers' safety legislation;
- b) A pre-demolition audit should be carried out before any renovation or demolition project, to identify reusable and recyclable as well as hazardous waste and to ensure that the health and safety of workers; and
- c) Before the waste is transported it should be verified if it is hazardous or not in order to provide appropriate transport that protects workers' health and safety.

However, the policy document says nothing about the excessive dust in CDW recycling plants which is a real health and safety concern that needs to be taken seriously.<sup>41</sup>



**H&S alert:** CDW workers risk exposure to hazardous materials, such as tar, radioactive waste, lead and electrical components containing mercury.



**H&S alert:** excessive dust in CDW recycling plants is a real health and safety concern for workers.



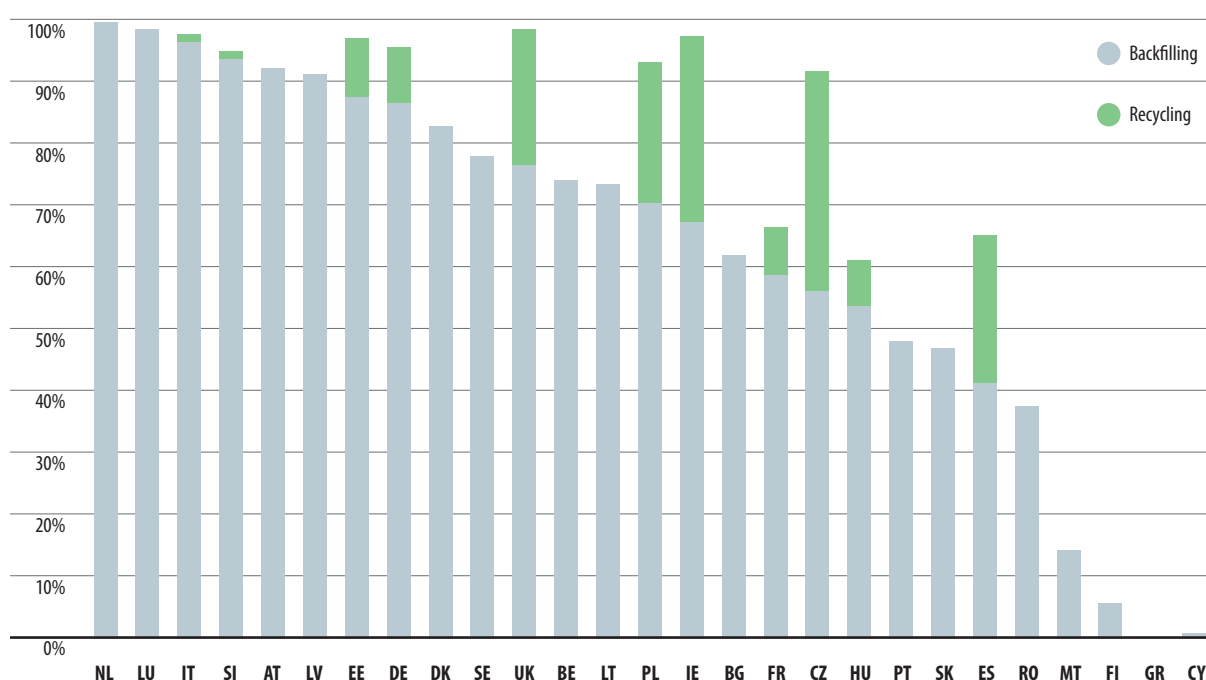
### Policy recommendation:

To protect the workers that carry out the vital but risky task of CDW recycling, it is important that the voluntary policy commitments outlined in the EU's [Construction and Demolition Waste Management Protocol](#) become binding.

## Policy recommendation:

Proper risk assessments should be carried out and the relevant trade unions consulted to ensure that the EU increases its CDW recycling capacity in a way that protects workers and the environment.

**FIGURE 5:** Construction and demolition waste across EU member states in 2011



### 4.3.2 Solid Municipal Waste

In Europe, each person produces nearly half a tonne of municipal waste per year on average. Put differently, every week more than 20 kg of municipal waste is generated per household.<sup>42</sup> While this is still a lot, the encouraging news is that between 2005 and 2016 the average amount of municipal waste per person in the EU declined by 7 per cent. However, there are huge discrepancies between EU member states. For example, while municipal waste per capita decreased in Bulgaria, Spain, Hungary, Romania and the Netherlands, it increased in Denmark, Germany, Greece, Malta and the Czech Republic.<sup>43</sup> More recently, due to the current Covid-19 pandemic, municipal waste has increased significantly. For example, in the UK households are estimated to have produced around 20 per cent more waste during the lockdown.<sup>44</sup> While this might only be a temporary change it could also be that the figures could be affected if more people continue to work from home.

Currently 47 per cent of the EU's municipal waste is recycled.<sup>45</sup> This trend is going up, while the use of landfill is decreasing (see Figure 6). And the EU has set an even more ambitious target of all member states recycling 65 per cent of municipal waste by 2035. However, not all EU countries are on track to achieve the 2020 target of recycling 50 per cent of municipal waste with Bulgaria, Croatia, Cyprus, Estonia, Finland, Greece, Hungary, Latvia, Malta, Poland, Portugal, Romania, Slovakia and Spain being unlikely to meet this target in 2020.

There is an increasing health and safety concern for the workers handling the collection and separation of (organic) waste in households. The conditions of storage are generally optimal for the growth of microorganisms. Frequent and reliable waste collection is essential as prolonged storage time for municipal waste means that microorganisms have more time to grow. With increasing urbanisation household waste is often stored in larger plastic containers and the waste collection is less frequent. In several EU countries, such as the Netherlands, the separation of recyclable household waste takes place at home. The divided waste is then either collected from the homes on a less regular basis or it is taken to central waste storage facilities. By slowing down the process of recycling collection the likelihood of contamination is increasing.<sup>46</sup>

In our previous report, *Waste Management in Europe. Good Jobs in the Circular Economy?*, we showed that municipal waste collection in Europe is split between private and public providers. However, in recent years there has been a trend towards public ownership. In fact, municipal waste collection is one of the most commonly insourced public services, in part because the contract length is usually much shorter than with, for example water provision, which increases the opportunities to remunicipalise when the contract expires. Often cost savings have been the main motivation behind the insourcing of this public service (see Box 3).<sup>47</sup>

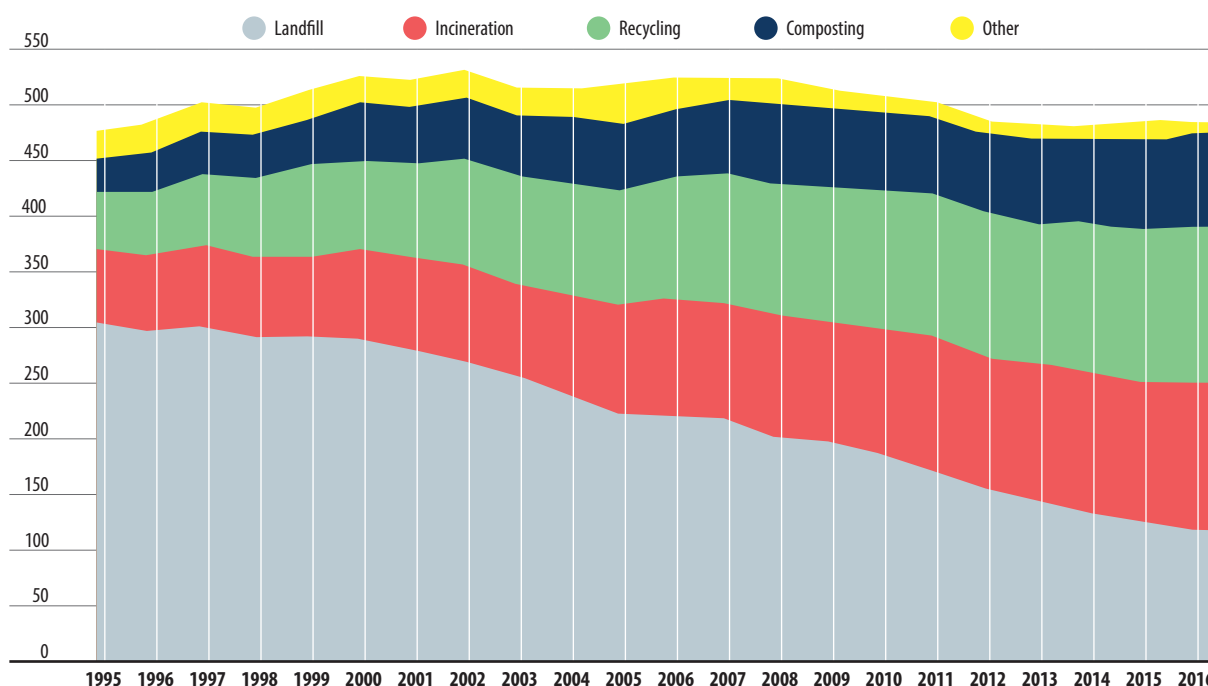
Remunicipalisation offers a real opportunity to increase the health and safety conditions for waste workers. For example, in Norway, after various municipalities remunicipalised their services a waste workers reported:

"Now that several Norwegian municipalities have taken waste collection back in-house, or organized it through their inter-municipal companies, there are positive effects to observe regarding health and safety.... Better control of waste services goes hand in hand with better working conditions for the workers.... Less strain, fewer overtime hours and less sickness absence resulting from better working conditions. Also, there is an increased interest among the workers in getting organized in a union, in order to improve both wage and working conditions. There were fewer organized workers in the private companies."<sup>48</sup>

Vidar Edsberg, waste-collection worker and wenior shop steward, Fagforbundet i Sirkula

A health and safety representative of the trade union Fagforbundet in Oslo also points out that the direct, in-house control and management of the waste service enabled the municipalities to quickly and efficiently respond to the Covid-19 pandemic.<sup>49</sup>

**FIGURE 6: Methods for municipal waste treatment in the EU (kg per capita)**



Source: Eurostat data in WHO 2018

### Box 3: Remunicipalisation

**‘Remunicipalisation’** is the return of public services from private control and/or ownership in any form to full public ownership, management and democratic control. Remunicipalisation means that municipalities and regional governments take back privately owned and/or managed services that are commissioned, under concession or funded by public bodies. The term thus emphasises the “sub-national” dimension of bringing public services back into public ownership in territories and communities.

At times, remunicipalisation is also used to describe the process whereby local or regional governments have established new municipal companies within liberalised public service markets to make a particular public service available, better or cheaper. In these instances the term ‘municipalisation’ would actually more appropriate.<sup>50</sup>

Examples of the remunicipalisation of waste collection in Norway<sup>51</sup> and Germany<sup>52</sup> showed that by taking the waste collection back in house the municipalities saved costs while at least maintaining the same quality of the service and that workers benefited through better working conditions and higher wages.



**H&S alert:** Long storage periods due to infrequent waste collection increase the risk of workers being in contact with contaminated waste.



**H&S alert:** Studies across the world have highlighted that waste collection workers are facing higher risks of accidents, such as being struck by moving vehicles, and musculoskeletal injuries than the general working population. Musculoskeletal injuries mainly affect the hands, arms, back or shoulders. Research also suggests that the use of two- or four-wheeled containers instead of sacks had given rise to more shoulder and arm injuries but fewer back injuries.<sup>53</sup>



### Policy recommendation:

By remunicipalising waste collection services local authorities can not only save money but also better ensure that the health and safety of these essential workers is looked after and that they are fairly remunerated.

#### 4.3.3 Wastewater

There is an increasing demand for water-reuse activities, due to the pressures of urbanisation and scarcity of water supply. Treated wastewater can be an alternative source of water especially useful in the agriculture and food sectors while sewage sludge can be used as a fertilizer<sup>54</sup>. In Europe, around 1 billion cubic metres of urban wastewater are treated and re-used every year. Yet, there is the potential to re-use six times as much. What is problematic for the extension of these activities is that the EU has no common environmental or health standards for water reuse in contact with food.<sup>55</sup> Some EU countries, such as Spain, have independently implemented regulatory standards.<sup>56</sup> However, because of the Covid-19 pandemic more sewage sludge is now being incinerated as less can be used for agricultural recovery.<sup>57</sup> The EU's new Circular Economy Action Plan aims to facilitate more circular economy approaches to water reuse in agriculture. Throughout the world the use of wastewater in agriculture is a common practice, but research has also shown that it can lead to serious illnesses such as diarrhoea, skin infection, parasitic infection and bacterial infection.<sup>58</sup> Consequently, careful attention needs to be paid to the health and safety of workers and consumers in the usage of wastewater.

There is some data that indicates that the life expectancy of sanitation workers is considerably lower than that of the wider population<sup>59</sup> due to the high-risk nature of the job. There is the risk of high exposure to biological agents and related health problems (see Table 1 in section 4.2).<sup>60</sup> According to a 2011 study workers in wastewater treatment plants are likely to contract diseases as a result of exposure to biological agents within one year if they were not already immune or suitably protected. This is because microorganisms can be transmitted in the ambient air in wastewater droplets which are generated during the treatment of sewage.<sup>61</sup> This is a particular health concern in light of the Covid-19 pandemic. While, at the time of writing, the exact danger is still unclear, it is suspected that the Covid-19 virus could also be spread in wastewater.<sup>62</sup> As such, proper protection for workers must be guaranteed. For instance, the CGT union in France



has called for sewage workers to be given adequate personal protective equipment (PPE) and that the government carries out epidemiological studies on the air they inhale.<sup>63</sup>

“The absence of research on Covid-19 in wastewater is in no way reassuring for us sewage workers, especially since we know that studies confirm that it is found in the stools of affected people. For the CGT union, the precautionary principle must prevail and it is therefore necessary to increase safety and security levels for all.”<sup>64</sup>

Didier Dumont, National coordinator for Water and Sanitation services at CGT and an employee of SIAAP, the public sanitation utility of Ile-de-France.

The dangerous nature of sewage work makes it particularly important that safety legislation is followed (see Box 2) and trade unions can play a crucial role in enforcement. For example, in Poland it is common practice that trade unions elect health and safety representatives, so-called social labour inspectors, who check if health and safety regulations are followed and if working conditions are adequate. Consequently, publicly operated wastewater companies, where there is trade union representation, are by and large believed to comply with the health and safety regulations. Conversely, in smaller private companies, where there is usually no trade union representation, health and safety regulations are often ignored.<sup>65</sup>

**H&S alert:** The high exposure to dangerous biological agents is a particular health and safety threat for sewage workers. The Covid-19 pandemic has amplified the health and safety threats for sanitation workers.



### Policy recommendation:

Proper risk assessments should be carried out in consultation with the relevant trade unions to ensure that the sewage workers' health is protected, in particular in regard to the recent Covid-19 outbreak.



#### 4.3.4 E-waste

Waste of electronic and electrical equipment (WEEE) is one of the fastest growing waste streams in the EU. It is increasing by around 2 per cent every year and is expected to grow to more than 12 million tonnes this year.<sup>66</sup> However, it is estimated that less than 40 per cent of the e-waste in the EU is currently recycled.<sup>67</sup> The health and safety risks of the WEEE are significant as it contains a complex mixture of materials that include hazardous content. The circular economy becomes especially relevant with WEEE as electronics require scarce and expensive resources, for example 10 per cent of the gold worldwide is used for electronic production.<sup>68</sup>

As electronic waste is classified as hazardous waste by the EU due to toxic parts containing substances such as mercury, lead and flame retardants, exports of WEEE to non-OECD and non-EU

countries are illegal. However, according to a study from the United Nations University up to 90 per cent of the world's e-waste was illegally traded or dumped. The United Nations Environmental Programme (UNEP) warned that thousands of tonnes of e-waste are falsely declared as second-hand goods and, in this way, exported from the global North to the global South, in particular to Africa and Asia.<sup>69</sup> Another recent study traced the illegal shipment of WEEE from the EU to Nigeria, Ghana, Hong Kong, Pakistan, Tanzania and Thailand. It is estimated that every year 352,474 metric tonnes of e-waste are exported from EU countries to countries of the global South, where labour costs are low and health and safety regulations are weak and/or lack enforcement.<sup>70</sup>

Two pieces of legislation are most relevant in regard to the safe handling of WEEE in the EU, namely the Directive on waste electrical and electronic equipment (WEEE Directive) and the Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive). Measures on the improved handling of WEEE are also set out in the new Circular Economy Action Plan with the European Commission announcing that it will present a 'Circular Electronics Initiative'. Among other aspects this initiative aims to improve the collection and treatment of electronic waste and considers the introduction of an EU-wide scheme to return or sell back old mobile phones, tablets and chargers.<sup>71</sup> As with other circular economy measures the EU again overlooks the role of workers that are dealing with WEEE. Re-using electronic devices is particularly dependent on manual labour that puts the health and safety of workers at risk. Hence, if the EU wants to expand recycling and re-use activities special attention needs to be paid to workers' health and safety.

It is important that policies and legislation that address the safe re-use, recycling and disposal of WEEE not only consider the workers in the formal economy but also address health and safety issues in the informal sector. Within Europe there is a whole shadow circular economy around the re-use of e-waste. Often marginalised groups, in particular Roma or Sinti, are engaged in these informal circular economy activities.<sup>72</sup> It is an intra-EU trade system, where waste is collected in Western EU countries with "higher developed" waste management and transported to Eastern EU countries with less developed waste management systems. For example, the trade between Austria and Hungary consists of around 70,000 tonnes that are annually transported to Hungary where the items are sold at flea markets. Common waste items that are shipped include not only electronics but also re-usable products like furniture, sporting equipment or clothes.<sup>73</sup>



**H&S alert:** Re-pairing and re-using electronic devices is particularly dependent on manual labour. Repair and recycling of electronic products exposes workers to toxic and radioactive materials contained in electronic waste. If the EU wants to expand recycling and re-use activities special attention needs to be paid to workers' health and safety.<sup>74</sup>



**H&S alert:** Research has also shown that children of metal or battery recycling workers have raised blood lead from dust carried home on their parents' clothing.<sup>75</sup> This highlights the importance of appropriate personal protective equipment (PPE) for workers even further and the right to adequate PPPE should also be extended to the informal economy.

## Policy recommendation:

To expand recycling and re-use activities of WEEE special attention needs to be paid to the health and safety of all workers – whether they work in the formal or informal economy or abroad.

## 4.4 Waste treatment

### 4.4.1 Landfill

While the rate of municipal waste that is disposed of by landfill in EEA countries fell from 49 per cent in 2004 to 34 per cent in 2014,<sup>76</sup> 175 million tonnes of waste still end up in landfill every year (without including mineral waste)<sup>77</sup> It is estimated that there are more than 500,000 landfill sites in Europe.<sup>78</sup> Landfill and incineration are at the bottom of the waste hierarchy (see section 3.1) and thus should be limited to the necessary minimum. In Europe the Directive 1999/31/EC on the landfill of waste regulates what type of waste can be sent to landfill sites. Article V of Directive 1999/31/EC on the landfilling of waste was amended by Directive (EU) 2018/850 to include the following targets:<sup>79</sup>

- By 2035, the amount of municipal waste sent to landfill sites should be reduced to 10 per cent or less of the total amount of municipal waste generated (by weight);
- By 2030, waste that is suitable for recycling or other material or energy recovery should not be disposed of in landfill sites;
- Separately collected waste should not be accepted in landfill sites.

A report commissioned by the European Commission suggested that landfill taxes could be used to prevent landfilling being the cheapest method of waste management and thus force EU countries to change to alternative treatment methods.<sup>80</sup>

Little research has been done on the working conditions and health and safety of workers operating landfill sites. One study of workers in Eastern Europe found that common health and safety risks at landfills are associated with hazardous emissions, dust, smoke, flies, odour, heat and cold. Moreover, long working hours that can affect workers' ability to handle machinery.<sup>81</sup> The study concludes by pointing out that:

'The poor employers' awareness of the complexity and benefits that the proper implementation of occupational safety and health brings, represents the biggest problem at landfills and utility companies.'<sup>82</sup>

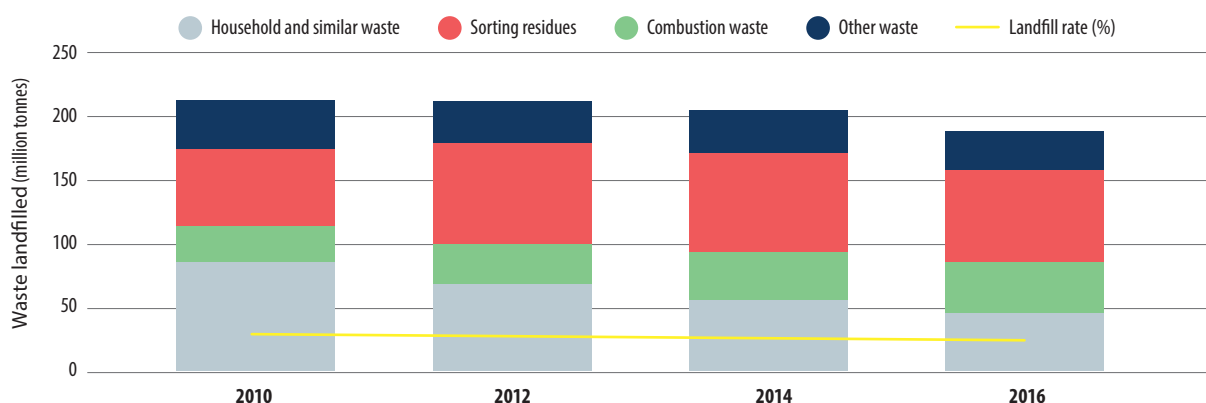
**H&S alert:** Attention needs to be paid to long working hours at landfills. Exhaustion of workers is particularly dangerous if they work with heavy machinery. Decent pay is crucial to avoid that workers are forced to take on excessive overtime to make ends meet.





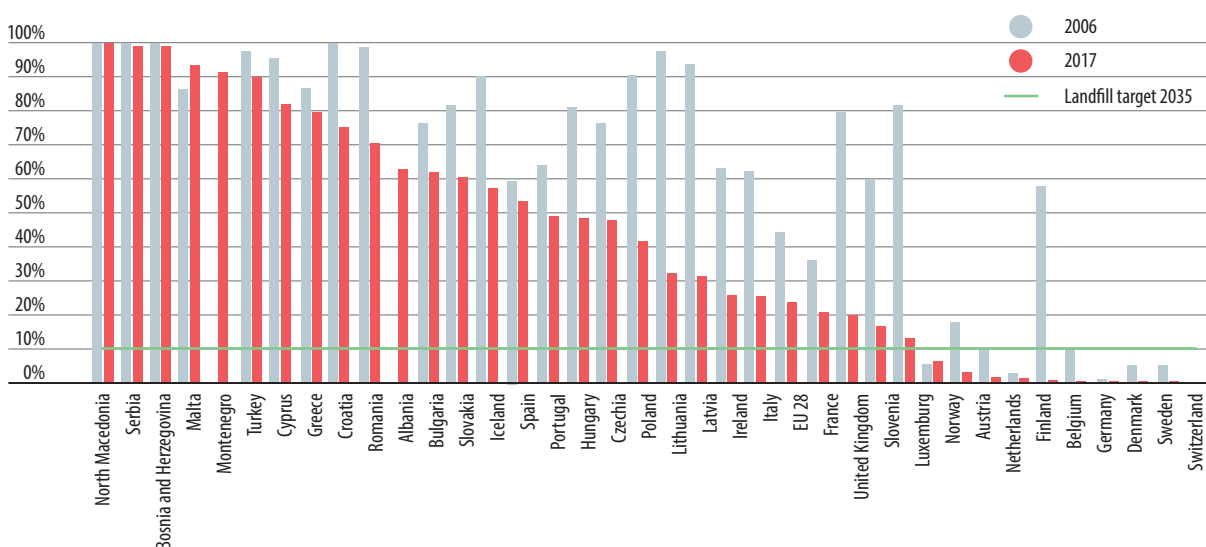
**H&S alert:** While there is a huge research gap concerning the health and safety of workers operating landfill sites, two cross-sectional studies from the USA reported that workers suffered from dermatological, respiratory, throat and gastro-intestinal symptoms. The main identified hazards were exposure to dust, metal particulates, bio-aerosols to include endotoxins, asbestos fibres and truck exhaust emissions.<sup>83</sup>

**FIGURE 7:** Amounts and share of waste deposited on landfills, by type of waste category in EU-28 + Iceland, Norway and Serbia



Source: European Environment Agency

**FIGURE 8:** Municipal waste landfill rates in Europe



Source: European Environment Agency

#### 4.4.2 Waste-to-Energy

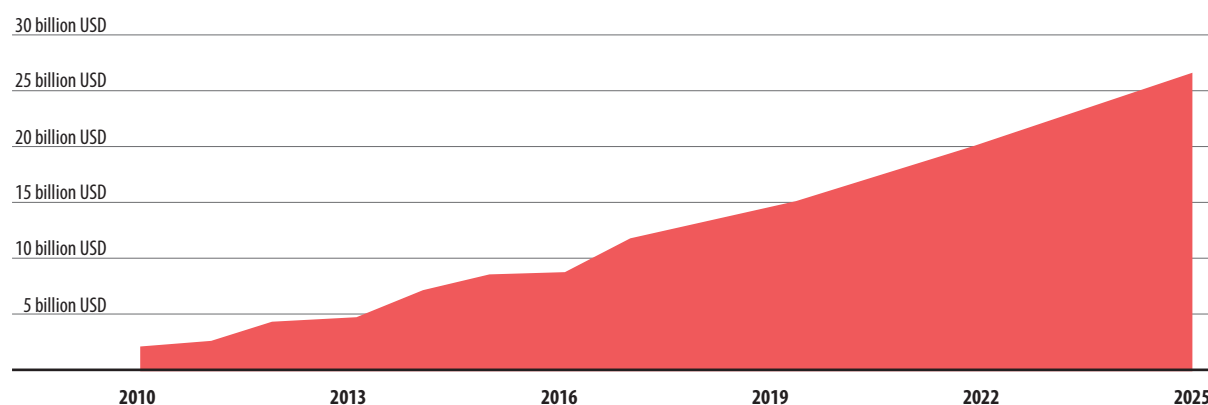
Waste-to-Energy (WtE), a process that generates energy in the form of electricity, heat or fuels from both organic and inorganic waste, is a fast-increasing trend worldwide. Over 1,700 WtE plants already exist globally with another 200 under construction that will be operational between 2020 and 2023.

#### Waste-to-energy in Europe

COUNTRY	NUMBER OF SITES	ANNUAL AMOUNT (M TONNES)
Germany	121	26
France	126	14
UK	46	10
Sweden	34	6
Switzerland	30	4
Austria	65	4

Burning waste with incinerators to generate energy is a profitable business opportunity. According to the United Nations Environmental Programme (UNEP) the worldwide WtE market had a value of \$9.1 billion in 2016 and is expected to increase to over \$25 billion by 2025. Conservatively estimated, the WtE market is growing by 5.5 per cent annually (See Figure 9).

**FIGURE 9:** Growth in global investment in WtE



Source: UNEP 2019

While WtE is often promoted as an environmentally friendly alternative to landfilling, it often ends up discouraging waste prevention as well as recycling.<sup>84</sup> Incinerators are expensive to build and to maintain. Due to the high investment costs, municipalities usually sign long-term contracts with private incinerator providers. For companies to recover the investment and to make a profit they need a guaranteed stream of waste.<sup>85</sup> Large-scale incinerators demand about 100,000 tonnes of municipal solid waste a year.<sup>86</sup> As such contracts with private providers often bind municipalities to deliver a minimum quantity of waste or to pay compensation fees in case this does not happen. This kind of arrangement tends to discourage recycling and waste prevention policies.<sup>87</sup> For example, the municipal authority in Dublin, Ireland signed a 45-year contract with the private company Covanta - a US-based company which also operates 41 plants around the world. Dublin committed itself to deliver 600,000 tonnes of waste every year. The construction of the plant cost around \$1 billion. The plant is generating enough electricity for 100,000 homes and created 100 jobs (and another 1,000 during its construction). However, within the first months of operation severe health and safety issues arose: 11 people were hospitalised following a lime leak; then business had to close as a result of a “plague of flies” coming from the plant.<sup>88</sup>

It can be very hard for municipalities to end these long contracts with private providers, even when severe problems occur and/or when the contracts no longer meet the city’s need. For example, in Sheffield, UK the council voted in January 2017 for an early end to the city’s 35-year with Veolia for household waste collection and the operation of an WtE plant, agreed in 2001 and due to expire in 2036.<sup>89</sup> Previously, the waste workers through their trade union, the GMB, had revealed that Veolia had been diverting recyclable household waste to its WtE incinerator. This increased pollution had prevented Sheffield from meeting its recycling targets and also meant that workers missed out on the bonuses they would have received if recycling targets had been met. However, threats of a very high compensation claim by Veolia prevented the municipality from taking back the service into public ownership.<sup>90</sup>

As such the UNEP warns that as large scale investment projects WtE can create a lock-in effect, since they require a certain amount of waste to run consequently hindering waste prevention.<sup>91</sup> This is particularly problematic, as several studies have shown that thermal WtE plants burn mostly recyclable or compostable waste.<sup>92</sup> In Sweden this problem became obvious. Due to successful waste reduction efforts Sweden now needs to import waste in order to run its WtE incinerators. In 2014 Sweden imported 1.1 million tonnes of waste for energy recovery.<sup>93</sup>

As such WtE should be considered as the best of the worst options. While it can reduce the volume of waste entering landfills by 75-90 per cent and is thus the preferable waste treatment method compared to landfilling and open burning it still produces waste and in particular residues that are hazardous and that put workers and the environment at risk. As such, the EU has recently advised member states to reduce WtE as it sees it as a barrier to achieving higher recycling rates.<sup>94</sup>



## Box 4: Ljubljana – Europe’s most circular capital



A positive example of an integrated and holistic waste management system that includes WtE can be found in Slovenia. Ljubljana is considered to be the first and only zero waste capital in Europe. Just over a decade ago, Ljubljana’s recycle rates were well below average in the EU – in 2008 it recycled less than 30 per cent of its waste. Slovenia managed to achieve the most significant decreases in the amount of landfilled municipal waste in the EU, cutting it by almost 70 per cent between 2006 and 2017.<sup>95</sup>

Its success is based on combining waste prevention, with an advanced municipal waste collection system that encourages the separation of waste and the development of a sophisticated waste treatment plant, which is considered to be one of the largest and most advanced in Europe. Ljubljana is pioneering publicly operated packaging-free vending machines for basic household items and all municipal institutions are required to use toilet roll that is produced from recycled milk and juice packaging.<sup>96</sup>



Photo: Luka Dakskobler

The Regional Centre for Waste Management (RCERO) treatment plant includes an energy production facility, but also processes residual waste into recyclable materials and solid fuel. Less than five per cent of the waste is sent to the integrated landfill at RCERO<sup>97</sup> which even turns bio-waste into high-quality gardening compost. RCERO is publicly owned and operated. The necessary investment of EUR 155 million came mainly from the EU Cohesion Fund (EUR 77.6 million, 66 per cent) with the rest from the national government and municipal budgets.<sup>98</sup> The example of Ljubljana shows that when waste management is publicly owned and operated it facilitates an integrated system where waste prevention can go hand in hand with recycling as well as WtE, rather than having these three waste management strands competing with each other for profit.

**H&S alert:** even new waste incineration facilities generate emissions and ash that contain heavy metals and other hazardous substances. Studies have found that incinerator workers have heavy metals and other toxins in their blood and urine.<sup>99</sup>



## Policy recommendation:



Holistic waste management systems - where waste treatment goes hand in hand with waste avoidance initiatives – should be encouraged. The example of Ljubljana illustrates that public ownership and control is essential for such a holistic waste management system to function well as it allows the prioritisation of environmental concerns over profit.

#### 4.4.3 Recycling and Composting

In 2017, the EU recycled around 56 per cent of its waste, accounting for 11 per cent of the EU's material resources needs.<sup>100</sup>

In our previous report, *Waste Management in Europe Good Jobs in the Circular Economy*, we highlighted that research in general, and in particular reports on the circular economy have largely ignored the labour aspect of recycling and if mentioned it was mostly in conjunction with its assumed job creation potential. In particular, the working conditions in the recycling sector in Europe have been marginalised in the debate around the circular economy. The few academic studies that exist on this topic portray a grim picture: workers in recycling factories are often working more than eight hours a day, with very few breaks. The working conditions are hard: the environment is very noisy and smelly and the work monotonous. People are working in a confined space and with the belt running at a high speed. These studies also suggest that most of the workers in material recovery facilities are migrants, and typically paid the minimum wage. Even less research has been done on jobs in re-use and repair sector.<sup>101</sup>

Moreover, in the above mentioned report, we also pointed to the significant contribution of the informal sector to recycling in Europe but to date it has been completely side-lined in the European circular economy agenda. This is despite the fact that several studies have shown that informal recyclers in Europe have kept many tons of waste out of landfills. While its informal nature also means that there is no official data, initial research suggests that there could be as many as one million active re-users and recyclers in Europe. Further, there is another hidden story in Europe's recycling sector, namely that a large proportion of its recycling is taking place abroad: In 2015 the EU exported 40 per cent of the plastics collected for recycling in 2015 (see section 5.2).<sup>102</sup>

A particular problem is the high amount of food waste in the circular economy with around 126 million tonnes generated annually in the EU.<sup>103</sup> The EU Court of Auditors issued a report in 2017 which heavily criticised the European Commission for its failure to contribute to a resource-efficient food supply chain by effectively tackling food waste.<sup>104</sup> It is thus good news that the EU promised to take action on food waste prevention and that the new circular economy action plan emphasises the EU's commitment to food waste reduction, as part of its forthcoming EU Farm-to-Fork Strategy.<sup>105</sup> Another issue is that large proportions of food waste and bio-waste in general are not properly managed. In many European countries bio-waste is sent to landfill or incinerated rather than composted or digested.<sup>106</sup> According to surveys carried out by the European Compost Network, only around 30 million tonnes of separately collected bio-waste is composted or digested annually in the EU. There are about 3,500 bio-waste treatment plants across Europe.<sup>107</sup>



**H&S alert:** the health and safety risks occurring in the recycling sector very much depend on the material that is being recycled as well as the facilities. For example, recycling and re-use of plastics involves high levels of water usage and it generates harmful air pollutants and waste residues.<sup>108</sup> Glass recyclers have reported increased nasal and chest symptoms from presumed exposure to harmful particles. Textile recycling is associated with high exposures to cotton dust and endotoxin. And when it comes to composting workers are particularly exposed to risks when the waste is sorted and shredded. Studies showed that Salmonella and Escherichia coli can be caused by biomass. In wood recycling factories dust in excess of the Workplace Exposure Limit of 5 mg/m<sup>3</sup> were identified as a particular health and safety concern as well as the exposure to airborne micro-organisms, particularly fungi and bacterial endotoxins. Irritant-induced asthma can be the consequence of these exposures.<sup>109</sup>



### Policy recommendation:

The EU needs to expand its recycling capacity. China's recent imposition of import restrictions have significantly reduced the EU's ability to export recyclable waste, demonstrating that the EU needs to act urgently on this matter as it can no longer simply export its waste problem.



### Policy recommendations:

Too little is known about the working conditions and in particular the health and safety risks facing informal and formal workers in different recycling activities. More research needs to be conducted and proper risk assessments should be carried out in consultation with the relevant trade unions to ensure that the EU increases its recycling capacity in a way that protects workers and the environment.



#### 4.4.4 Re-use, repair and waste prevention

Waste in the EU is increasing annually (see section 3.2.1). To reduce the amount of waste produced, we need to scale up waste prevention measures with re-use and repair activities at the core of this process. However, the limited research conducted on waste re-use, in particular in the electronic waste sector, found that re-use is not profitable without the injection of public funds.<sup>110</sup> Repair work is particularly labour intensive. It is thus striking that studies focusing on re-use and repair activities in the circular economy completely disregard the workers delivering such services. For example, a recent study by the European Economic and Social Committee (EESC), Identifying the impact of the circular economy on the Fast-Moving Consumer Goods Industry, points to the opportunities to enhance the circular economy of mobile phones by increasing re-use, repair and recycling but does not even mention the workers operating these services, let alone the health and safety conditions of their jobs.<sup>111</sup>

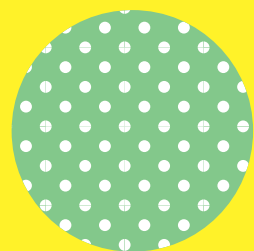
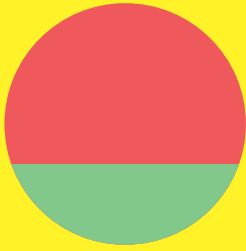
However, studies have shown that for waste prevention to be effective a “paradigmatic change” is needed that involves less consumption and the political, social and cultural (indeed ideological) transformation prioritising the reduction in waste.<sup>112</sup> While waste prevention is the top priority in the EU’s waste management strategy, there are limited policies and legislation that address it. This is especially evident in the new Action Plan for the Circular Economy where the European Commission emphasises the responsibilities of producers as well as consumers, but mainly looks at the issue of waste prevention through increased recycling. However, waste prevention measures should not be conflated with or used as a synonym for recycling. In line with the waste hierarchy (see Figure 2) waste prevention and recycling are, and should be treated as, two different processes (see section 3.1). First and foremost, waste prevention can be achieved through less consumption and less production. Yet, such an approach stands in stark contradiction to the EU’s growth model (see section 3.1).



### Policy recommendations:

Rather than promoting consumption we need to repair, re-distribute and share resources. Several measures can facilitate these trends:

- Extension of the sharing economy (see section 6.4);
- Investing in waste education not only in schools but also in communities. If we really want to prevent waste this has to involve a change of mind-set. As such, we need an army of waste-educators and campaigners who will facilitate change in communities now and in the future;
- Strengthen measures to counter the designed premature obsolescence of products. While it is a positive sign that the EU announced its aim to take action, proper regulations need to be put in place that penalise and prosecute companies that do not comply with these regulations;
- Incentivise companies, through subsidies or tax initiatives, to produce products that last longer and thus create less waste.



# 5. A global circular economy

## 5.1 Circularity in the supply chain

The potential for the circularity of products is determined in the design phase and therefore the creation of a circular supply chain is a global matter. The EC's commitment to eco-design that breaks with a "take-make-use- dispose" model should therefore be welcomed. The EU's new Circular Economy Action Plan proposes 'a sustainable product policy legislative initiative', which aims to widen the Eco-design Directive (which is currently limited to energy-related products) to "the broadest possible range of products and make it deliver on circularity".

This legislation will be framed in line with the EU's 'sustainability principles', which are:

- Improving product durability, reusability, upgradability and reparability, addressing the presence of hazardous chemicals in products, and increasing their energy and resource efficiency;
- Increasing recycled content in products, while ensuring their performance and safety;
- Enabling remanufacturing and high-quality recycling;
- Reducing carbon and environmental footprints;
- Restricting single-use and countering premature obsolescence;
- Introducing a ban on the destruction of unsold durable goods;
- Incentivising product-as-a-service or other models where producers keep the ownership of the product or the responsibility for its performance throughout its lifecycle;
- Mobilising the potential of digitalisation of product information, including solutions such as digital passports, tagging and watermarks;
- Rewarding products based on their different sustainability performance, including by linking high performance levels to incentives.<sup>113</sup>

It is evident that currently the workers on which the circular economy relies are ignored in the principles that guide the EU's sustainable product policy legislative initiative. Yet, some health and safety risks for the workers that operate the circular economy can be prevented in the production stage of the goods that will end in waste. As such, the health and safety of the workers that dismantle products and make them ready for re-use or for recycling should be integrated in the design phase of the products. In other words, to not only advocate eco-design but also fair-design. This could, for example be enhanced, by clearly marking hazardous material in the products and implementing systems for safe dismantling into the product design.

On the consumption side, we see a similar process. The European Commission aims to 'empower the consumer'. To do so, it seeks a revision of the EU consumer law to include more transparency for consumers on the making of the product and the availability of repair services, spare parts and repair manuals. It also aims to set minimum standards for sustainability labels/ logos and for information tools. Again, none of these mechanisms include any reference to the

workers involved in the production, recycle, reuse or disposal of the products. In line with ethical trading initiatives consumers should be informed about the workers and the conditions under which the product came into being including health and safety. In other words, the EU should not only have an Ecolabel but also a Fairlabel.

An example of integrating fairness as well as environmental concerns into product design is the Fairphone. The Amsterdam-based company, founded in 2013, produces a mobile phone while sourcing as many materials as possible in human and environmentally friendly ways. It pays attention to the working conditions of the people who are mining the metals that are used in the phone, by relying on certified Fairtrade standards.<sup>114</sup> The latest addition to the Fairphone range is made out of over 50 per cent recyclable material.<sup>115</sup>

### Policy recommendations:



The EU sustainability principles need to be improved by including a commitment to protect workers' health and safety and to ensure decent working conditions and pay. This means to not only advocate for eco-design but also for fair design. Similarly, from the consumer side, the EU should not only have an Ecolabel but also a Fairlabel.

## 5.2 Waste exports

A key aspect of Europe's circular economy success has been achieved by exporting waste to other countries<sup>116</sup> – mostly countries with lower labour costs and weaker environmental regulations.<sup>117</sup> Up to very recently China was the leading destination for recycling, reuse and disposal of solid waste from all over the world. In 2016, China imported two-thirds of the global plastic waste.<sup>118</sup> It also imported a significant amount of the world's scrap paper — 60 percent of the United States, and more than 70 percent of Europe's scrap paper were exported to China,<sup>119</sup> and so were large proportions of textile waste as well as scrap metal.<sup>120</sup> This globalised circular economy was facilitated by shipping companies offering cheap rates for return-trips for vessels shipping goods to high-income countries to avoid empty return cargo. Moreover, China and other South East Asian countries are major manufacturing hubs that could directly re-use some of the recycled materials.<sup>121</sup> For example, out of the over 300 million tons of plastics that are produced annually, 20 per cent are produced in China. It appeared to be an effective functioning global circular economy system. However, in reality only 10 percent of global plastic waste was recycled in 2017 with huge amounts of waste ending up in the oceans.<sup>122</sup> Plastic waste makes up 75 per cent of the waste floating in the marine environment, and over two-thirds are not biodegradable.<sup>123</sup>

Shipping waste across the globe increases the risk of exposure to dangerous substances for those workers handling the waste because the conditions of storage are generally optimal for the growth of harmful bacteria. The waste usually arrives in countries of the global South unsorted and contaminated.<sup>124</sup> However, in January 2018 this global circular economy hit a major barrier: China banned the import of plastic wastes that did not meet the new purity standards as well as other waste streams to stop soiled and contaminated materials entering the country and

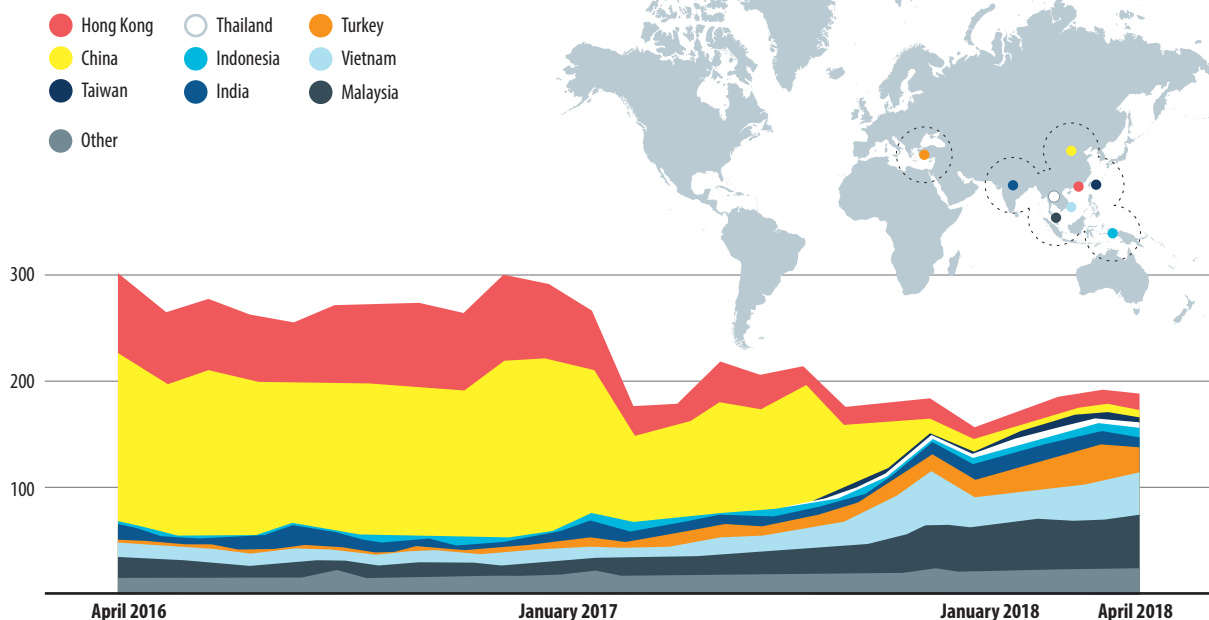
which were overwhelming processing facilities there.<sup>125</sup> Consequently, the plastic waste shipments to China dropped by 99 percent in 2018 compared with 2017.<sup>126</sup> Other Southeast Asian countries tried to pick up the burden (see Figure 13) but were quickly overwhelmed by the rapid increase of plastic waste and soon after introduced bans to avoid becoming the new dumping grounds.<sup>127</sup>

The bans on plastic and other wastes imports had global consequences. In several high-income countries more plastics ended up in landfill and incinerators.<sup>128</sup> As the costs for shipping recyclables increased it became less profitable and in England alone, an additional half-a-million more tons of plastics and other household garbage were burned in 2019.<sup>129</sup> On a more positive note, China's waste import ban also incentivised stricter waste avoidance policies across the world. The EU, for example, stated to restrict the use of micro plastics and single-use plastics.<sup>130</sup>

However, waste smuggling increased too. Several Asian countries, such as Malaysia, Cambodia and Indonesia reported the increase of illegally imported, contaminated waste.<sup>131 132</sup> These countries started to track down this illegal trade and to send the waste back to the countries of origin.<sup>133</sup> Officially, according to EU law and a global waste agreement, called the Basel Convention, only clean, sorted and recyclable plastic can be exported.<sup>134</sup> However, weak controls and law enforcement means that a lot of contaminated and hard-to-recycle plastic is still shipped out of Europe and processed in illegal factories predominately in East Asian countries.<sup>135</sup> Relaxed regulations and weak implementation as well as the illegal waste trade exacerbate the health and safety risks for the workers dealing with the waste and the residents living near to (illegal) recycling plants and incineration factories. An investigation by Greenpeace in 2018 traced recycling waste from the UK to Malaysia and found that it was treated in illegal recycling factories that put the health and safety of the residents nearby at risk.<sup>136</sup> Yet it is particularly harmful for the workers who deal with this - illegally and legally traded - dirty, contaminated and toxic waste every day. Inter-EU smuggled waste also became an issue with illegal plastic incineration taking place in Poland and a lot of it coming from the UK. In spring 2019 2,452 tons of illegally stored waste were discovered in Poland, with an estimated value of €1.9 million. Three British waste disposal companies (that cannot be named for legal reasons) were also investigated by the UK's Environment Agency for sending 1,000 tons of waste to Poland as false recyclables.<sup>137</sup>

**FIGURE 10: Destinations of Europe's Plastic Waste**

Where European plastic waste goes to rest (Thousand metric tons)



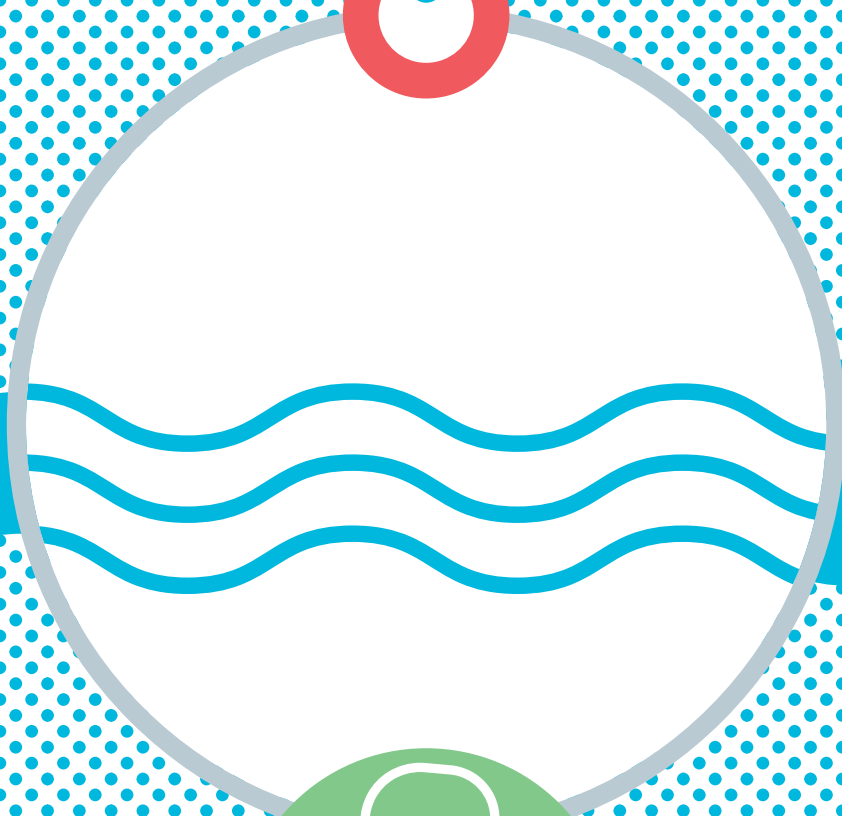
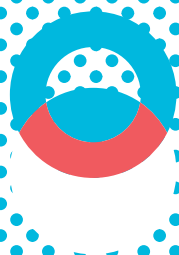
Source: Eurostat COMEXT

### Policy recommendations:

Europe needs to invest in more local and regional recycling plants in order to avoid the long shipping periods that globe increases contamination and the risk of exposure to dangerous substances for those workers handling the waste. Recycling plants need to be built and operated with the health and safety of workers in mind.







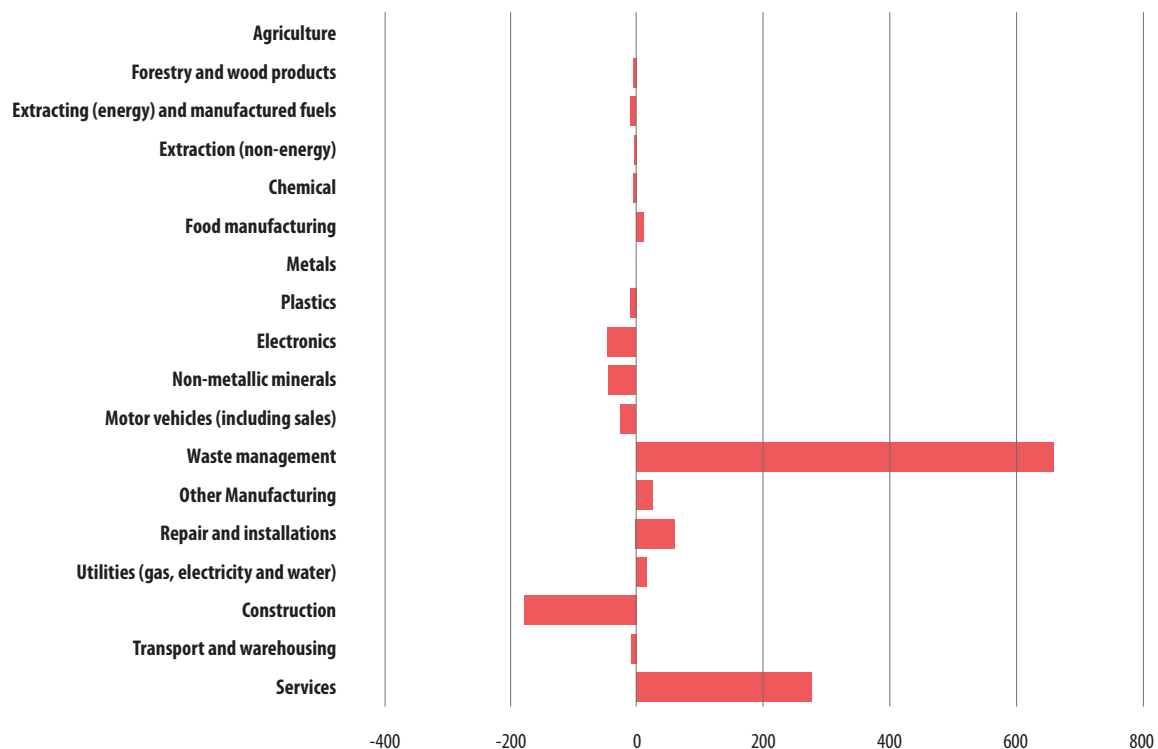


## 6. Safe and good jobs in a future circular economy?

### 6.1 More green jobs?

There has been much hype around the job creation potential of the circular economy. A recent study on the impact of circular economy policies on the labour market commissioned by the European Commission estimates a net increase of around 700,000 jobs.<sup>138</sup> Any such predictions should be considered with caution due to the economic downturn that is expected following the Covid-19 pandemic. Yet, if these predictions hold true, most of the job creation is predicted to occur in the waste management sector (see Figure 11). These calculations are based on the assumption that re-use and recycling are more labour intensive than disposal. However, the study does not take account of the fact that a large proportion of recycling and re-use activities

**FIGURE 11:** Expected circular economy job impacts across the EU28 sectors by 2030



Sources: E3ME, Cambridge Econometrics

take place in the informal economy and/or in countries that generally have weaker environmental and labour standards than the EU. Any study of the labour market in the circular economy should consider these geo-political (where do we deal with waste) and socio-political (who is dealing with waste) dimensions. Moreover, rather than speculating on the numbers of jobs in the circular economy studies on labour have to look at the quality of the jobs. The study barely engages with the health and safety aspects of the workers in the circular economy, apart from mentioning that the workers should be familiar with existing health and safety legislation. However, to enable a sustainable transition towards a circular economy there needs to be guarantees that the workers who operate it – whether they work in the formal or informal economy and inside or outside Europe – are protected. As such policy documents and future research should not only consider the job potential of the circular economy but also the nature of these jobs.

## 6.2 Automation for safety?

In light of the global Covid-19 pandemic there have been increased calls for automation, as companies want to pandemic-proof their activities. Arguably automation can generally help to improve workers' health and safety in waste processing. Automated processes can be used especially in green and organic waste plants to separate workers from waste and thus reduce their exposure to biological agents.<sup>139</sup> Moreover, machines can replace physically strenuous labour such as heavy lifting. There has been some increase in automation in the waste management sector with automated underground waste collection systems already installed in some places like Copenhagen, Barcelona, London, and Stockholm. In these systems waste is pulled through an underground pipeline via a vacuum system into a central waste station where it is automatically sorted before it is sent to the appropriate treatment plant.<sup>140</sup>

Similarly, up to half of Europe's recycling plants now have some automated processes in place,<sup>141</sup> with some, such as in Oslo, Norway, already fully-automated.<sup>142</sup> However, the impact of automation on jobs in the waste sector is still not clear with a study from PricewaterhouseCoopers (PwC) claiming that up to 30 per cent of all jobs in the UK could be automated by 2030 and identifying waste management as one of the most at-risk sectors. It predicted that up to 63 per cent of jobs could be lost.<sup>143</sup> However, manual labour is still needed in waste management. Accurate waste sorting and recycling depends on the eyes of experienced workers and as such it is likely that automation will be implemented to complement rather than completely replace manual labour.<sup>144</sup> This type of automation is referred to as Cobots – collaborative robots that are designed to work with people in the same work environment.<sup>145</sup>

Nonetheless, fears that automation could replace jobs are justified. A recent analysis of automation by the Financial Times suggests that mostly lower paid jobs will be automated.<sup>146</sup> To ensure that workers will not lose out it is important that trade unions use social dialogue and collective bargaining to develop frameworks and regulations that guide possible automation processes.

In Italy waste collection workers and their trade union FP-CGIL raised concerns about an automated bracelets system that electronically detects if waste containers are empty. The union argues that this introduced an unnecessary and excessive surveillance system that diverts attention away from improving health and safety aspects in the sector.<sup>147</sup>

## 6.3 Collective safety: organising in the circular economy

### 6.3.1 Health and safety disputes in the waste sector

Waste management is an essential public service with a need for regular collections for safety reasons. Unfortunately, the pay of workers in the sector is often low, the working conditions hard and unpleasant and, on top of that, the health and safety of workers often disregarded. This is especially relevant in times of the COVID-19 pandemic.

In the UK, waste collectors in Wirral, Merseyside employed by waste management company Biffa walked out in March 2020 in protest over inadequate safe-distancing measures during the Covid-19 pandemic. As the coronavirus has spread, workers have increasingly taken action on health and safety grounds with waste workers in the US and Canada walking out to defend their health and safety and demand pay for working in hazardous conditions.<sup>148</sup> In Europe workers have the right to stop working if their health and safety is in danger. For example, in the UK section 44 of the 1996 Employment Rights Act gives workers the right to walk out of their workplace if they reasonably believe that their health and safety is at serious and imminent danger.<sup>149</sup>

Taking industrial action is a measure of last resort but there have been several strikes of waste workers in the last few years. A few examples include:

- In Birmingham, UK over 300 waste workers were on strike for seven weeks in summer 2017. The strike and other actions short of a strike - an overtime ban and workers returning to depots for all lunch and tea breaks, therefore delaying services- was a response to Birmingham council's restructuring plans that would have resulted in job losses of around 12 staff and reductions in pay.<sup>150</sup>
- In Italy in 2018, waste workers called for action when a worker, Michele Lorusso, died while attempting to fix a broken waste truck. The workers and their trade union FP-CGIL highlighted the rise in accidents in the sector and called on the industry to make health and safety a priority.<sup>151</sup>
- In Athens, Greece waste collection workers and street cleaners took strike action in October 2019, joining other municipal workers in wider strike action to protest at government proposals to ease the privatisation of such essential public services.<sup>152</sup>
- In Portugal, waste workers took strike action in December 2019 to demand implementation of the 35-hour week, 25 days' annual leave and an allowance to take account of risky and onerous working conditions.<sup>153</sup>
- In France, waste workers joined a wider strike over pensions early in 2020. While not all waste collectors in Paris joined the strike, rubbish nonetheless started piling up on the streets as around 60 per cent of the workers at the three biggest incineration sites that serve the city were on did take strike action.<sup>154</sup>

### 6.3.2 Organising in the informal waste economy

In our previous report, *Good Jobs in the Circular Economy?*, we highlighted the significant contribution of informal recycling and re-use labour to the circular economy and not just in Eastern and Southern Europe. In Northern European countries, for example in Germany and Denmark, bottle collectors and other informal recyclers make a living from waste. Due to its informal nature there is no reliable data on the scale of the informal sector. However, initial research suggests that there could be as many as one million active re-users and recyclers in Europe which is roughly the same number as formal recycling workers. The informal recyclers in Europe have kept many tons of waste out of landfill. It is striking that the EU still ignores the role of the informal sector in its circular economy strategy. Informal workers are particularly exposed to health and safety risks as they don't usually wear protective clothing and deal with hazardous material and sharp items. Studies have shown that informal waste workers in Europe are usually of Roma and Sinti ethnicity; or migrants or refugees often without formal identity papers; and/or are young or elderly people; and/or homeless.

Several solidarity networks and informal waste workers associations have been established. On a global level Women in Informal Employment: Globalizing and Organizing (WIEGO) is advocating for the voice of informal workers to be heard and campaigning for their recognition and legitimisation as workers. In our last report we showcased examples of informal waste worker organisations in Europe and suggested that these could be potential allies for public sector trade unions. And this is exactly what happened in Paris, France where a support system has been developed between the public authority, formal workers and informal waste recyclers. A re-use and recycling centre as well as a reclaimers' market every Saturday and Sunday in Paris were created. Such a partnership is not only of financial value to the informal recyclers, but it is also an important recognition of their role in waste prevention and re-use.<sup>155</sup> Furthermore, the first steps have been taken by several organisations representing informal waste workers in Europe to build a European network to strengthen their political representation and to gain recognition as key stakeholders in Europe's re-use sector.<sup>156</sup>

## 6.4 Sharing is caring: The shared economy

"Encouraged by the idea that we can build the economies we live in, individuals and communities across the globe are taking economic matters into their own hands to create worlds that are socially and economically just."<sup>157</sup>

In order to reduce waste, we need to consume less. This premise has prompted debate around the sharing economy, the idea that rather than everyone buying their own products, we simply share them. As such, under-utilised resources such as homes, tools, clothes and vehicles are used more effectively by many people rather than just by those who own the product in question. The act of sharing also creates communities by bringing people together thus stimulating bonds in the neighbourhoods.<sup>158</sup> The idea of sharing has given rise to new forms of entrepreneurship. Several internet-facilitated sharing economy platforms have gained in popularity, such as Blablacar for cars and Peerby for tools.<sup>159</sup> The sharing economy has been praised for its waste prevention potential and thus its contribution to the circular economy. A study from 2015

advocated that a transition towards a 'leasing society' could fundamentally change the relationship between producers and consumers and incentivise re-use rather than disposal. The basic idea behind the leasing society is that by selling services rather than products, the responsibility for the disposal of waste is transferred from the customer to the producer and thus it would be an incentive for the producer to maintain the product for as long as it is possible. The study suggests, for example, that rather than everyone owning a washing machine people would rely on washing services.<sup>160</sup>

However, several studies have shown the danger of idealising the sharing economy/leasing society. In recent years we have seen that these internet-facilitated for-profit sharing economy platforms have led to more precarious work and, due to its (bogus)-self employed nature, created a void where health and safety regulations are often bypassed or ignored.<sup>161</sup> In response to the hyper-exploitation in the gig economy workers across the world have organised themselves into cooperatives. Similar to the traditional workers cooperatives, platform cooperatives are not only collectively owned but also governed by the workers who make a living from them.<sup>162</sup> Examples in the taxi industry became especially prominent, such as Union Cap in Madison, Wisconsin in the US, Coop taxi in Montreal, Canada and COOP Taxi in Seoul, South Korea.<sup>163</sup> Other examples, of sharing economies are run by communities with the prior aim to benefit communities and the environment rather than providing an income for workers. Examples include community guardians, do-it-yourself bike repair workshops, where anyone can come to fix their bike or build a bike from recycled spare parts and community kitchens often using 'skipped' food resources that would have otherwise been thrown away.

These shared economy initiatives have the potential to reduce waste while also benefiting communities. However, several studies have pointed to the problem of scale. Often these initiatives are reliant on key people - initiators, hosts and contributors. As such, while they might work in a localised and usually urban setting it is questionable if these shared economy examples would also work on large-scale basis providing services that are accessible to everyone and not just a few people who might have the time and the capacity to run such projects. If we are serious about waste prevention and thus less consumption a more coordinated response is needed. One example, would be to facilitate municipally run and owned lending and repair stations, where people can temporarily access items that are not used daily or just for a certain periods, such as tools, toys and vehicles and where everyday items can be repaired, while, at the same time, ensuring that proper account is taken of the health and safety of the workers doing the repair job.



## 7. Conclusion

In light of the climate emergency and the ever-increasing amounts of waste in Europe it is not surprising that policy makers are pinning their hopes on a transition to a circular economy. This could radically alter the way production and consumption is organised, with waste no longer seen as something that has to be disposed of, but as a valuable resource. Yet EU policy often overlooks the fact that a circular economy relies on workers to operate it. This report has highlighted the failure to consider risk assessments and the health and safety of both formal and informal waste workers. Currently labour in the circular economy is invisible. Furthermore, Europe's leading position in the circular economy has been dependent upon the exportation of waste management to developing countries with weaker labour and environmental standards. There has to be a focus on geo-political (where do we deal with waste) and socio-political (who is dealing with waste) dimensions.

This report emphasises the need to address production and consumption and to move away from premature product obsolescence and towards building recyclability into the design process. Eco-design should also mean fair design in terms of conditions of work. This report proposes that the EU could move beyond its Eco-label by also introducing a Fair-label that guarantees that health and safety standards for workers are integral to the entire supply chain.

The circular economy contains internal contradictions that are at odds with waste prevention. As such, the EU's "green-growth" strategy runs the risk of green-washing unsustainable policies. There is profit to be made from waste, as well as in the increased production and consumption that is enabled by circular economy activities. Yet there is no money to be made from waste reduction. Conversely, it costs national and local governments to subsidise and enable waste prevention and re-use activities. To align its circular economy policies with its climate change policies the EU needs to invest in and enhance policies promoting waste prevention. Good and safe jobs should be created in waste education and the implementation of waste prevention measures. In this regard, it is also essential to distinguish waste prevention from recycling activities – too often there is a conflation of these two elements of waste management. This becomes especially evident when examining how the circular economy is measured. To efficiently address the waste crisis, waste prevention rather than just waste re-use is needed and that can only be achieved if production and consumption levels go down. In other words, a complete re-thinking of our economy and in particular a diversion from the economic growth model is required.

Moving from a circular economy driven by profit rather than sustainability can only be achieved by public ownership and control. Public ownership prevents competition between waste treatment services operated by different private providers that results in ineffective waste management. A holistic waste management approach is needed similar to that found in Ljubljana, Slovenia.

The creation of green jobs at the centre of the Green New Deal must aim for good quality jobs rather than just focusing on the quantity of jobs created. Hazardous and unpleasant work must be properly compensated. Automation may play a role in protecting workers from the huge hazards involved in the waste sector, but it also threatens jobs and livelihoods. It has to be negotiated by trade unions and, indeed, part of the reorganisation of work at societal level that can lead to changes to the working week for all, something that goes hand in hand with reductions in carbon emissions.

COVID-19 has exposed on an unprecedented scale the environmental risks to workers. In response trade unions have promoted a number of demands and charters setting out requirements for workplace risk assessment, adequate personal protective equipment and workers' health and safety.<sup>164</sup> This reassertion of health and safety, following a period of deregulation, offers an opportunity to challenge and improve the working conditions of both informal and formal workers in the circular economy.







# Notes

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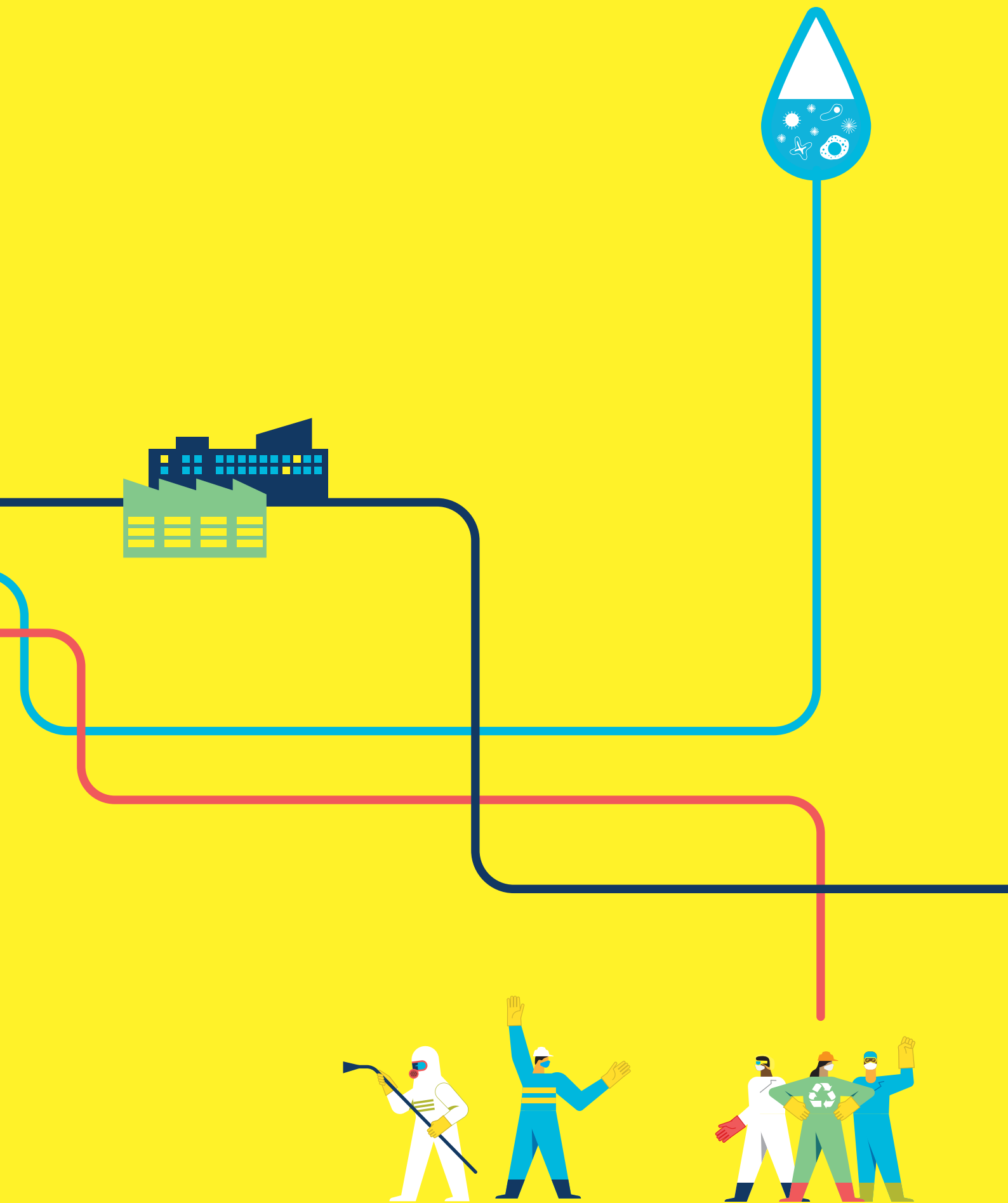
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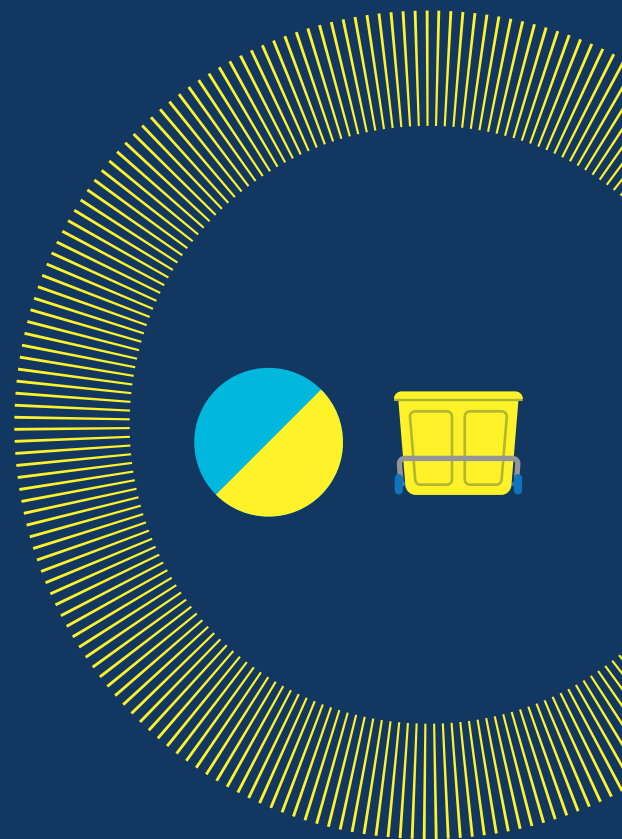
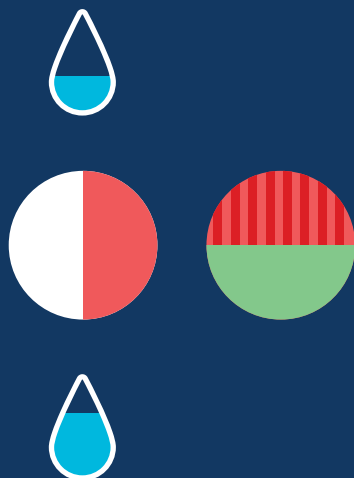
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