

# 5. Social sustainability at work and the essential role of occupational safety and health



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A socially responsive transition with equity of worker protection and rights must be the point of departure for the workplaces of tomorrow

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# Introduction

This chapter highlights occupational safety and health (OSH) as one of the key components of social sustainability in the context of the major concurrent transitions under way in the world of work.

Social sustainability is one of the three key pillars of sustainable development, alongside environmental sustainability and economic sustainability. In this model, the social dimension is constructed in relation to the other dimensions; for example, it has often been argued that, at EU level, the balance has long been tipped in favour of economic sustainability (European Parliament 2020; Polomarkakis 2020). While social sustainability as a concept has been dubbed ‘fuzzy’, with no blueprint conceptualisation in either policy documents or academic papers, there are EU policies that focus directly on the issue, including the EU Strategic Framework on Health and Safety at Work 2021-2027 (European Parliament 2020). The strategy strives for improved prevention of accidents and illnesses, highlighting that OSH risks continue to be a substantial cause of morbidity and mortality in the EU, with stress contributing to around half of all lost working days, and more than 200 000 workers dying each year from work-related illnesses. The EU’s OSH strategy also acknowledges that the changes in the world of work brought about by the twin transition – green and digital – pose challenges to workers’ safety and health (European Commission 2021a). A case in point is the transformation of the existing housing stock into eco-sustainable dwellings as part of the green transition. This will involve an unprecedented shake-up of the construction industry, which is dealing with the demolition of some 35 million buildings containing asbestos, a workplace carcinogen (ETUC 2022). Furthermore, it is anticipated that digitalisation will increase the number of European workers exposed to work-related psychosocial risk (PSR) factors such as cognitive overload, task repetitiveness and psychosocial demands induced by permanent electronic monitoring and surveillance of workers’ performance, as well as algorithmic human resources management (EU-OSHA 2021a).

In the context of this twin transition, a traditional bifurcation of hazards between those that affect physical health and those with mental health impacts can be observed. This chapter clarifies the situation by describing EU-specific trends in occupational safety and health and benchmarking the situation in respect of physical risks (work-related accidents and worker exposure to asbestos) and psychosocial risks against the stated ambition of the EU’s OSH Strategy to improve the prevention of work-related accidents and illnesses and the ‘Vision Zero’ approach to eliminating work-related deaths in the EU. The EU’s OSH strategy furthermore states that it is time to ‘ensure that occupational safety and health is fit for the future’ (European Commission 2021b), and this chapter assesses the fitness of the EU’s legal framework on OSH for the transitions and the future.

# Work-related accidents



Evidence shows that the long-term 20<sup>th</sup>-century trend towards safer workplaces is levelling off and may have reached a plateau

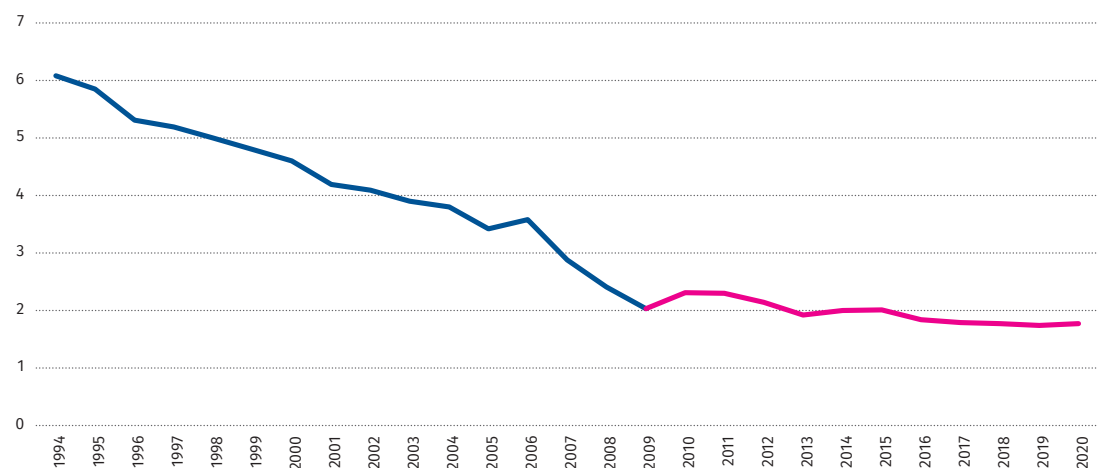
Great progress was made in terms of workplace safety during the 20<sup>th</sup> century, with the workplace becoming considerably safer. Increasingly strict regulations, more effective personal protective equipment, constantly improving machinery safeguards and greater awareness of the risks of heavy manual work ensured a steady decrease in the frequency and severity of work-related accidents in Europe. Another key factor was the long-term process of deindustrialisation and the outsourcing of manufacturing, resulting in a shift towards service industries (De Backer et al. 2015), with many service jobs being less likely to be associated with poor working conditions than jobs in the goods-producing sector (OECD 2001). In Germany, for instance, the number of fatalities at work per year decreased from 10 000 deaths one century ago to a little over 500 deaths in 2011. Although the importance of improving safety and health at work is increasingly widely recognised, evidence shows that the long-term 20<sup>th</sup>-century trend towards safer workplaces is levelling off and may have reached a plateau. The rate of fatal accidents at work in the EU decreased by about 26% between 2009 and 2020, compared to 60% between 1998 and 2009 (Figure 5.1). Between 2016 and 2020, the rate of fatal injuries at work remained broadly level at 1.8 per 100 000 workers; in 2020, there were 2.7 million accidents at work in the EU27, of which 3 355 were fatal.

There are significant differences between the Member States in terms of recent developments

in the rate of fatal accidents at work. Figure 5.2 shows the changes in the incidence of fatal accidents at work during the 2018-2019 and 2019-2020 periods. Despite the temporary halt of many economic activities, rates increased in 13 Member States in 2020 compared to the previous year. The largest increase was in Cyprus, where the rate increased almost twofold over a year, from 2.45 to 4.45. There were two additional Member States where the rate rose by more than 1 per 100 000 persons employed: Italy and Malta. In Italy, the increase resulted in the largest death toll of all Member States, with an additional 285 deaths compared to the previous year. At the other end of the spectrum, Luxembourg recorded the largest decrease in the accident rate, with a reduction of 1.42 deaths per 100 000 persons employed, followed by France with a reduction of 0.99. In France, the decrease in the incident rate resulted in the largest absolute decrease in the number of fatal accidents, with 262 fewer deaths compared to the previous year. However, this large reduction – when viewed in the context of the steep increase that occurred during the preceding period (0.79) – essentially marked a return to the norm.

More generally, a comparison of the 2018-2019 and 2019-2020 periods shows that the overall picture is heterogeneous not only between Member States but also over time, with significant variations in both directions from one period to the other. This is partly explained

Figure 5.1 Rate of fatal accidents at work between 1994 and 2007 for common economic sectors in the EU15 + Norway, and between 2008 and 2020 for all economic sectors in the EU27 (incident rate per 100 000 workers)



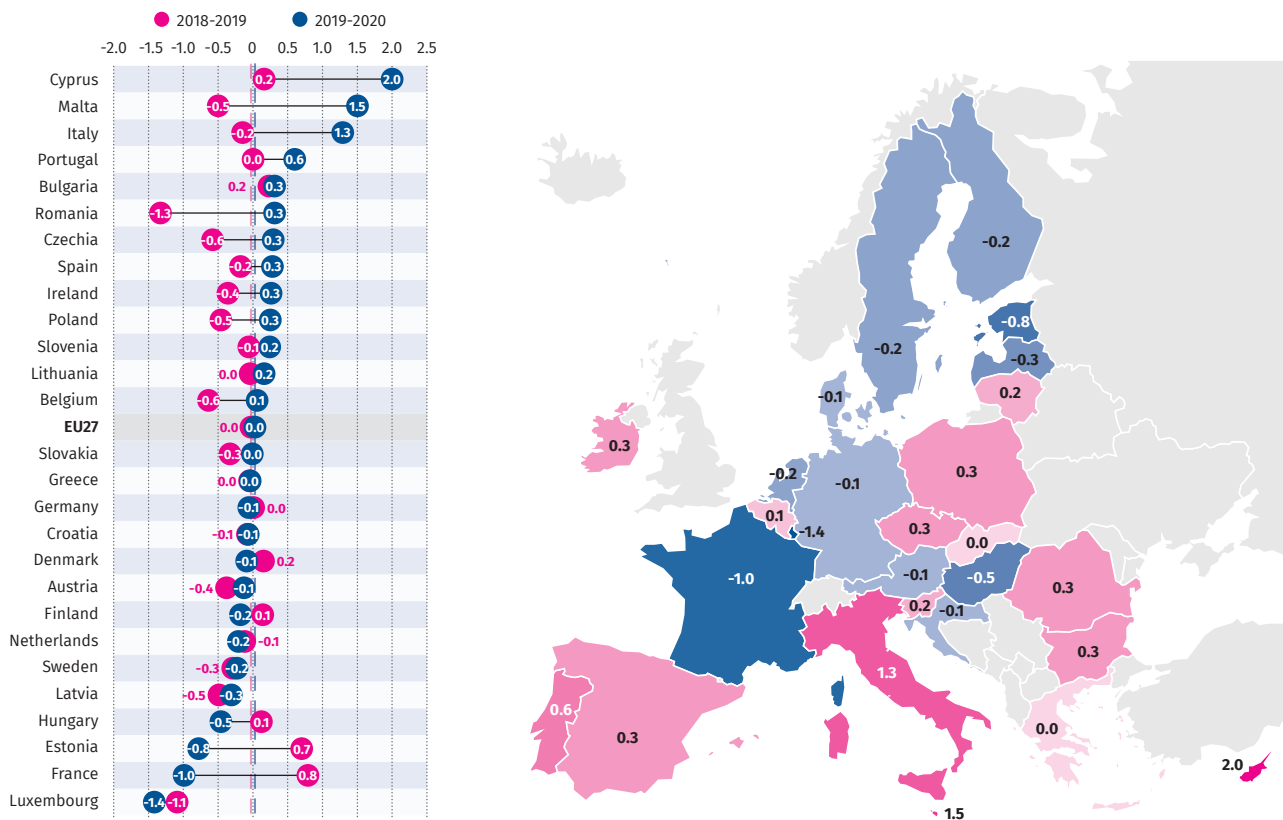
Note: Data for common economic sectors in EU-15 + Norway (1994 - 2007), and for all economic sectors in EU-27 (2008 - 2020). Source: European Commission (2021c).

by the fact that the likelihood of having an accident depends, among other factors, on the economic activity in which a person is engaged. For instance, in 2020, around two thirds of fatal accidents at work took place in the following sectors: construction (21.5%), manufacturing (15.2%), transportation and storage (15%) and agriculture, forestry and fishing (11.4%). The relative weight of these activities varies between countries according to the structure of each domestic economy, and also over time due to changes in the level of economic activity of each sector. Given that these sectors were massively impacted by the lockdown measures resulting from the Covid-19 pandemic, it is no surprise that several Member States recorded an improvement in the overall rate of fatal accidents between these two periods. Yet, despite the temporary halt of these sectors, the trend recorded by 11 Member States actually pointed in the opposite direction, moving from a reduction in incidence between 2018 and 2019 to an increase between 2019 and 2020. Overall, no consistent pattern can be observed across countries in terms of how the Covid-19 pandemic has impacted fatal workplace accidents.

With the overall rate of improvement slowing down and the trend becoming more erratic,

the Vision Zero adopted in the EU Strategic Framework 2021-2027 seems a long way off. A linear regression analysis shows that fatal accidents at work would end by 2062 in the EU27 if the pace of change were similar to that during the 2010-2019 interval. In this scenario, a total of 25 166 workplace deaths should be expected by the end of 2029. Forecast analyses on a country-by-country basis indicate that Poland would reach the target first in 2028, followed by Portugal and the Netherlands in 2032. In contrast, fatal accidents at work would end in 2124 in Italy at the current rate of progress, and would never end in Croatia, Greece, Malta, Spain and Hungary. Analysis of this kind provides an estimate of the zero horizon only if it is assumed that the trend will progress at a pace similar to the 2010-2019 interval and in a linear fashion. Yet it is unlikely that the trend will follow a strictly linear pattern; this follows from both the aforementioned reasons and the evolving nature of occupational risks in the context of the rising pace of innovation and changes in working life. Moreover, the decrease is likely to level out more and more as the downtrend progresses. This analysis does, however, succeed in showing the discrepancies between Member States in the context of the

Figure 5.2 Changes in the rate of fatal accidents at work during the 2018-2019 and 2019-2020 periods (change in incident rate per 100 000 workers compared to previous year)



Source: Own calculations based on Eurostat (hsw\_n2\_02).



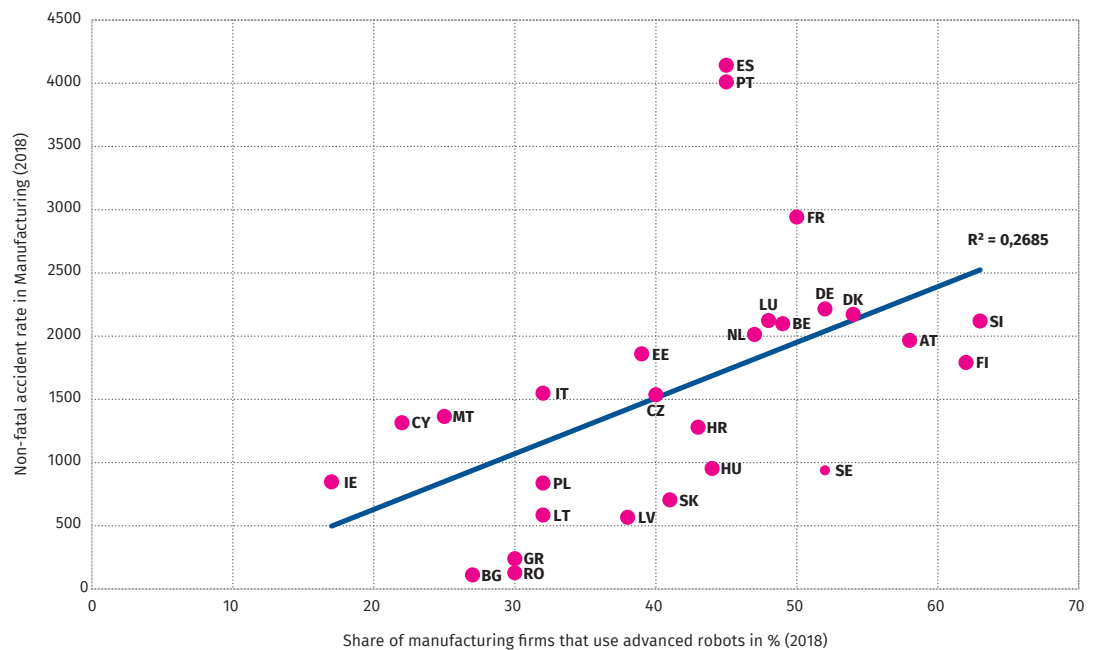
Analysis reveals a higher incident rate of non-fatal accidents in countries with a higher share of manufacturing firms using advanced robots

zero-death target, and the implications of the plateau that has been observed in recent years. A comparison with the same analysis conducted last year does, in fact, reveal that the zero-death horizon has been pushed back by five years in the case of Czechia and 82 years in the case of Italy, for instance. Finally, the anticipated wave of green renovations is likely to impact workers in the construction sector, which boasts the highest rate of fatal accidents and insufficient protection against asbestos, and this might hinder achievement of the zero-death target yet further.

The digital transition calls for a new era of automation and data integration in the manufacturing industry. Digital advances in areas such as cloud computing, robotics and artificial intelligence are expected to cut operating costs, enhance velocity and enable customer-centric products. However, multiple case studies highlight that such systems are not without risks for workers. For instance, the Center for Investigative Reporting (CIR) revealed a mounting injury crisis at Amazon warehouses, one that is especially acute at robotic facilities.

The CIR report showed that grabbing and scanning operations have increased from 100 to 400 an hour, and the rate of serious injuries was more than 50% higher than in non-robotic warehouses. Industrial robot accidents are not tracked by reporting agencies at EU level, but instead are grouped with other industrial accidents, making it difficult to assess the risks associated with the use of advanced robotics. In an attempt to shed light on the matter, Figure 5.3 plots the share of manufacturing firms using advanced robots against the incident rate of non-fatal accidents in manufacturing in 2018, by country. This reveals a moderate positive linear association: incident rates in manufacturing tend to be higher in countries with a higher share of manufacturing firms using advanced robots, with two clear outliers (Spain and Portugal). The findings do not prove causality, and a complex web of factors is involved in explaining cross-national differences. However, they suggest that further attention should be paid to the development of advanced robotics in the EU27 and to its impact on key OSH indicators.

Figure 5.3 Share of manufacturing firms using advanced robots against non-fatal incident rate in manufacturing in 2018, by country



Note: Significant with  $R^2 = 0,2685$ .  
Source: Own compilation based on Eurostat (hsw\_n2\_01) and European Investment Bank (Investment Survey 2019/20).

# Work-related illnesses: asbestos



Between 2 and 4 million people have died in the EU as a result of exposure to asbestos, the vast majority being asbestos workers

A major component of the green transition is the construction sector, which must rise to the challenge of rapidly transforming the built environment into a more sustainable version of its current form. This will lead to an increase in workers' exposure to hazardous substances, including asbestos. Over 220 million building units were constructed in the EU before the total ban on asbestos, and a significant portion of today's building stock therefore contains asbestos. With the adoption of the European Green Deal and the Renovation Wave for Europe, it is expected that most of these buildings will undergo maintenance, renovation or demolition. The goal set by the European Commission is a doubling of the annual rate of energy renovations by 2030. Between 4.1 and 7.3 million workers are currently exposed to asbestos in the EU, with 97% working in construction, and that number is expected to increase by 4% per year for the next 10 years (Garrett and Warming 2021). A whole generation of workers, mainly in the construction sector but also in the general population as a result of environmental contamination, will therefore be at increased risk of exposure to asbestos fibres if the necessary measures are not put in place.

Inhalation of asbestos fibres can cause asbestosis and different types of cancers, including mesothelioma and lung, laryngeal and ovarian cancers. The risks of contracting these diseases increase with the number of fibres inhaled. In most cases, symptoms develop only after a long latency period of 20-40 years. Although the manufacture of asbestos and its placement on the market and use have been banned in the EU since 2005 (or much earlier in some Member States), there is still no decline in deaths from asbestos-related diseases. Today, asbestos kills around 90 000 people every year in the EU as a result of lung cancers and mesothelioma (Table 1), and the mortality rate will continue to rise for at least one or two more decades in Europe.

The construction industry is the third largest sector in the EU, and 10% of the individuals working in this sector are cross-border workers, including a significant share of self-employed workers (European Commission 2021c). The share of temporarily posted workers from low-wage countries is very high (De Wispelaere

and Pacolet 2017). These workers, who are particularly vulnerable to breaches of health and safety standards, are often unaware of the dangers of the deadly fibres, and, in most countries, there is a lack of the necessary awareness, training and safety precautions.

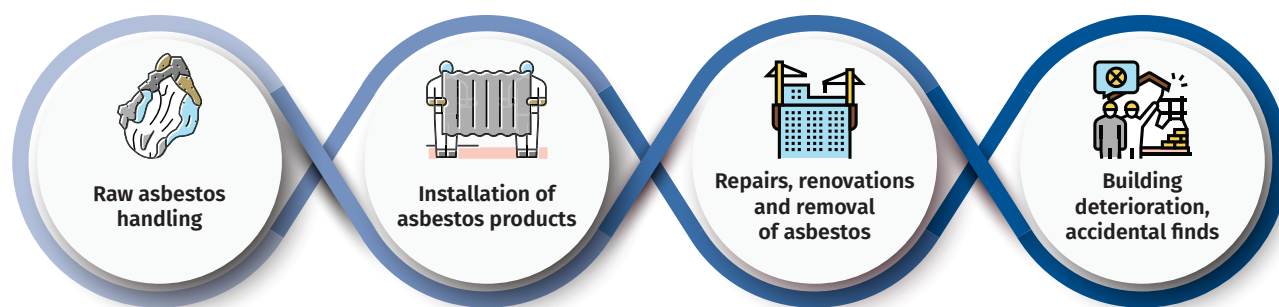
Table 5.1 Occupational cancer deaths due to asbestos, EU27, 2019

Country	Occupational cancer deaths	Country	Occupational cancer deaths
Austria	1 929	Italy	10 348
Belgium	2 140	Latvia	403
Bulgaria	1 432	Lithuania	611
Croatia	744	Luxemburg	128
Cyprus	184	Malta	112
Czechia	2 349	Netherlands	3 979
Denmark	1 275	Poland	7 292
Estonia	297	Portugal	2 176
Finland	1 163	Romania	3 845
France	12 038	Slovakia	1 114
Germany	18 730	Slovenia	435
Greece	1 733	Spain	8 762
Hungary	1 999	Sweden	2 273
Ireland	1 029	<b>Total</b>	<b>88 520</b>

Source: Institute of Health Metrics and Evaluation, Global Burden of Disease and Injury, IHME/GBD, The Lancet Oct 2020, <https://vizhub.healthdata.org/gbd-compare/>

The medical community has been aware of the adverse health effects of this deadly substance since the early 20<sup>th</sup> century, when the first cases of asbestos-related mortalities were diagnosed and documented. Despite this knowledge, the use of asbestos continued, *inter alia* due to the scandalous efforts of the pro-asbestos lobby to denigrate the risks associated with asbestos exposure and to keep vital information out of the scientific literature and the popular press (Michaels 2008). The use of asbestos reached its heyday after World War II, when it was used in ever greater amounts in a continuously growing number of products in industry and building construction. Since then, it is estimated that between 2 and 4 million people have died in the EU as a result of exposure to asbestos, the vast majority being asbestos workers.

Figure 5.4 The four waves of asbestos exposure



Source: Adapted from DOI: 10.3390/ijerph19074031.

Different epidemiological ‘waves’ of human exposure to asbestos can be distinguished (Figure 5.4). The first wave was composed of miners and workers in the asbestos industry. The second wave was composed of carpenters, plumbers, electricians, car mechanics and others having worked with asbestos-containing material. The third wave is composed of all workers involved in the repair, renovation and removal of asbestos, and the EU will experience a fourth wave composed of people exposed to the asbestos deteriorating over time in the buildings (or nearby) where they work or live. These different waves overlap due to the very long latency period between exposure and onset of asbestos-related diseases. Moreover, since the exposure history of most asbestos victims has not been recorded, it is difficult to estimate the number of deaths associated with each wave.

The asbestos-related cancers that we see today are likely to be the result mainly of the third wave of exposure in combination with the very end of the first wave, the decline of the second wave and the start of the fourth wave of exposure. This is corroborated both by the fact that the production of asbestos in Europe all but ceased after 1985 due to the introduction of the first restrictions in EU legislation and the rising incidence of mesothelioma (a cancer almost exclusively caused by asbestos exposure, but observed in recent years in patients with no history of occupational exposure).

Both a comprehensive strategy on the safe removal of all asbestos and ambitious legislation on this topic at EU level are urgently needed in order to halt the third and fourth waves of human exposure to asbestos and ensure a just and socially fair transition in the construction sector.

In September 2022, the European Commission published a proposal for a revised version of the Directive on the protection of workers from the risks related to exposure to asbestos at work (European Commission 2022). The aim of the proposal is to lower the occupational exposure limit (OEL) value, which is a minimum requirement in all Member States and has remained unchanged since 2003, from 100 000 fibres/m<sup>3</sup> to 10 000 fibres/m<sup>3</sup>.

This reduction clearly does not go far enough to provide adequate protection for the health and safety of exposed workers. Back in 2007, the Netherlands adopted a national OEL of 2 000 fibres/m<sup>3</sup>, and the European Parliament, in a resolution adopted in 2021 (EP 2021), called for the EU limit value for asbestos to be lowered to 1 000 fibres/m<sup>3</sup> (a reduction by a factor of 100 compared to the current value). This much stricter limit value is also supported by the European trade unions, which are demanding further improvements to the text (ETUC 2021). Yet an exclusive focus on the limit value is far too narrow an approach in view of the challenges. Many Member States have already adopted other



measures, such as the mandatory identification of any asbestos that is present in buildings and the introduction of specific requirements for different kinds of work with asbestos.

The EU has a chance of safely removing, once and for all, this dangerous carcinogen from the European building environment. If the EU does not take up the synergistic opportunity to solve this issue offered by the Green Deal, the Renovation Wave and the recovery plan for Europe, the deadly asbestos legacy will be passed on to the next generation of workers and building inhabitants and users. To stop this lethal trend, it is high time that a comprehensive strategy was adopted for the safe removal of all

asbestos in the EU. The strategy should focus on the recognition and compensation of all asbestos-related diseases and incorporate a legal framework for national asbestos removal plans, including an assessment of the extent of the problem and of the associated costs, details of who will bear these costs, commitments of adequate public financial support and a clear timeline indicating the dates by when this should be accomplished.

As a reminder, occupational cancers are preventable, and their cost in the EU accounts for between 270 and 610 billion euros per year, or 1.8% to 4.1% of the EU's GDP (Vencovsky et al. 2017).



# Work-related psychosocial risks

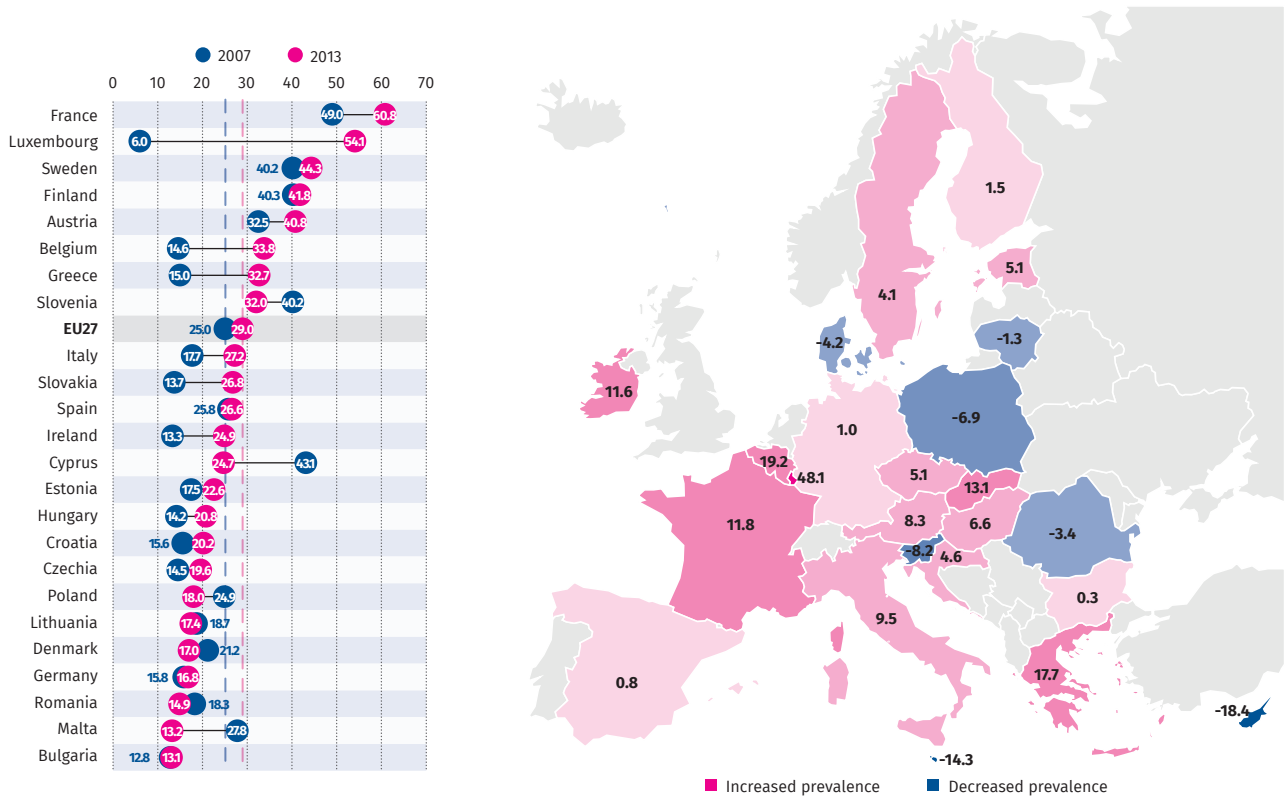
44.6% of workers in the EU were exposed to at least one psychosocial risk factor at work.

Another notable OSH trend in Europe is the rising prevalence of psychosocial risks: Figure 5.5 shows the percentage of persons in employment reporting exposure to risk factors that can adversely affect mental health. The data were collected as part of the 2007 and 2013 ad-hoc modules of the EU Labour Force Survey (EU-LFS) and cover people aged 15 to 64. Prevalence rose by 4% between 2007 and 2013 in the EU27, with almost one in every three workers being exposed to at least one psychosocial risk factor in 2013. The largest increase was for Luxembourg, where a ninefold difference in the rate of workers exposed was observed. The percentage of exposed workers rose in 17 Member States, with five countries recording a double-digit increase.

The 2007 and 2013 waves of the EU-LFS included only three factors relating to mental health at work: harassment or bullying, violence or threat of violence, and time pressure or overload of

work. The theoretical background underpinning the 2020 edition of the survey departed from a focus on abusive behaviours (e.g. harassment, bullying, violence) to a broader perspective, including a greater emphasis on the organisation of work. In 2020, 44.6% of workers were exposed to at least one psychosocial risk factor. As shown in Figure 5.6, a clearer and more complete picture of the situation can be obtained by recognising that the five additional factors included in the 2020 wave account for a large share of the exposure. Dealing with difficult customers and job insecurity are the second and third most frequent risk factors for mental health at work, mentioned by 10.4% and 6.1% of respondents respectively. The survey has thus started to reveal the magnitude of the issue in Europe. Yet some key psychosocial factors are still missing, such as effort-reward imbalance and work-life balance. For instance, it has been shown that 6.21% of depression cases

Figure 5.5 Share of EU workers exposed to risk factors that can adversely affect mental health between 2007 and 2013 (%)



Notes: Data not available for Latvia, Netherlands and Portugal. Low reliability for Germany\_2007. The map on the right shows the change between 2007-2013 in p. points. Source: Own compilation based on Eurostat (hsw\_exp1).



Exposure to PSR factors is subject to socio-demographic and sectoral differences

Figure 5.6 Share of EU workers exposed to risk factors that can adversely affect mental health in 2020 by type of factor, age group, sex, educational attainment level, economic activity and size of enterprise (%)

By type of factor	
Harassment or bullying	0.8
Violence or threat of violence	1.1
Lack of autonomy, or lack of influence over work pace or work processes	1.4
Another significant risk factor	1.5
Lack of communication or cooperation within the organization	3.9
Job insecurity	6.1
Dealing with difficult customers, patients, pupils, etc.	10.4
Time pressure or overload of work	19.5
By age group	
15 - 34 years	41.2
35 - 54 years	47.0
55 - 64 years	43.3
By sex	
Males	43
Females	46.5
By educational attainment level	
Less than primary, primary and lower secondary education (levels 0-2)	36.0
Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	42.3
Tertiary education (levels 5-8)	51.5
By economic activity (NACE Rev. 2)	
Sectors with the highest rate	
Human health and social work activities	58.5
Activities of extraterritorial organisations and bodies*	52.7
Education	50.4
Sectors with the lowest rate	
Mining and quarrying	34.8
Agriculture, forestry and fishing	31.0
Activities of households as employers**	22.2
By Size of enterprise	
Small	40.1
Medium	44.8
Large	47.7

\* Low reliability

\*\* Including undifferentiated goods and services producing activities of household for own use

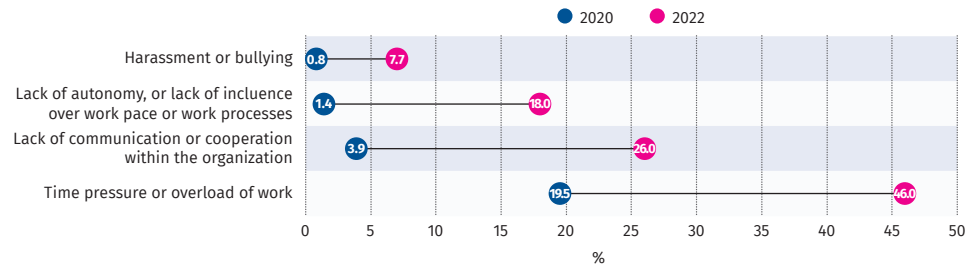
Source: Own compilation based on Eurostat (hsw\_exp1, hsw\_exp3, hsw\_exp9 and special ad-hoc extraction).

are attributable to effort-reward imbalance, i.e. a mismatch between high efforts spent and low rewards received at work (Niedhammer et al. 2021), and work-life conflict is known to impact the health of women in particular (Franklin et al. 2022). Including these factors is likely to result in an even higher rate of workers being found to be exposed to risk factors that can adversely affect mental health.

Exposure to PSR factors is subject to sociodemographic and sectoral differences, and workplace size also plays a role. 46.3% of women are exposed to at least one mental

health risk factor, compared to 40% of men. As far as specific factors are concerned, 'dealing with difficult customers' was reported as a problem by 13.0% of women compared to 8.1% of men. The LFS data show that more highly educated workers were more likely to report being exposed to mental health risk factors, with this being the case for more than one in two workers with tertiary education. More women than men graduate from tertiary education in all of the EU Member States, and three fifths of tertiary education graduates in 2020 were women (Eurostat 2022).

Figure 5.7 Share of EU workers exposed to risk factors that can adversely affect mental health in 2020 and 2022, by factor (%)



Note: Only the items with identical or close to identical wording were selected for comparison.  
Source: Own compilation based on EU-OSHA Flash Barometer Pulse Survey 2022 and EU Labor Force Survey 2020.

In the EU, 3 in 10 women work in education, health and social work, compared to only 8% of men (European Commission), and a large share of workers exposed to PSR was observed in these sectors ('human health and social work activities' (58.5%) and 'education' (50.4%)), as well as in the sector 'activities of extraterritorial organisations and bodies' (52.7%). The lowest percentages were reported in the sectors 'mining and quarrying' (34.8%), 'agriculture, forestry and fishing' (31%), and 'activities of households as employers' (22.2%).

Workers aged 35 to 54 were more likely to report being exposed to PSR factors (47%) compared to those aged 55 and older (43.3%) or 34 and younger (41.2%). The greatest share of exposed workers was observed in large enterprises (47.7%), followed by medium-sized (44.9%) and small enterprises (40.1%).

In April 2022, the European Agency for Safety and Health at Work commissioned a Flash Eurobarometer survey with the aim of gaining more insights into the state of OSH in the post-pandemic world, including the mental health stressors with which workers are confronted. Figure 5.7 shows a systematic comparison of exposure for the four stressors that have an identical or very similar wording in the Flash Eurobarometer 2022 and the Labour Force Survey 2020.

The comparison hints at an unprecedented deterioration in psychosocial working conditions following the pandemic. The largest increase in exposure to mental health stressors was observed for time pressure or overload of work. Almost one in two workers (46%) reported being exposed to this factor in 2022, compared to 19.5% before the pandemic. About one quarter (26%) mentioned poor communication or cooperation within their organisation, compared to only 3.9% before the pandemic. Similarly, the share of workers reporting a lack of autonomy or influence over work pace and

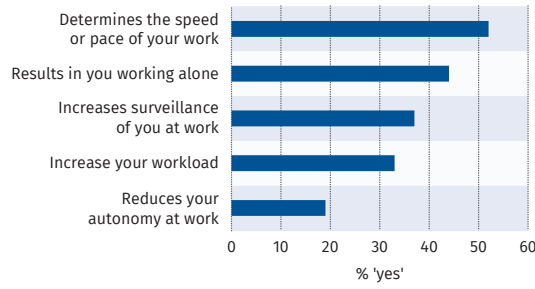
processes increased from 1.4% to 18%. Bullying and harassment at work is also on the rise, with 7% of respondents mentioning this factor in 2022 compared to 0.8% before the pandemic. Consistent with these findings, the Flash Eurobarometer survey shows that 44% of the respondents agree or strongly agree that they experience more work-related stress as a result of the Covid-19 pandemic (EU-OSHA 2022).

The worsening of psychosocial working conditions is linked, in many job roles, to the growing use of digital technologies and the related processes that lead to work stress, digital stress and the impairment of mental health (Stacey et al. 2019; Dragano and Lunau 2020). The pandemic has accelerated the digital transformation of business, with employers massively investing in digital capabilities to operate a tele-workforce. In Germany, for instance, where digital infrastructure has lagged behind (OECD 2021), almost half of establishments have invested in digital technologies such as hardware, software or digital infrastructure since the start of the pandemic (Bellmann et al. 2020; Aminian et al. 2021). The Flash Eurobarometer shows that the growing use of digital technologies has implications for work organisation (Figure 5.8). Half of the respondents across the EU (52%) say that digital technologies are used to determine the speed or pace of their work, and 1 in 3 (33%) considers that these technologies have increased their workload. Digital technologies have led to isolation for 44% of respondents, and to increased surveillance for just under 4 in 10 (37%). Finally, 19% of respondents say that the use of digital technologies reduces their autonomy at work. Pre-pandemic evidence confirms that the use of digital technologies in the workplace is frequently associated with psychosocial risks. Time pressure is an issue for 54.5% of companies where systems are used to determine the content or pace of work, and for 57.1% of companies using systems to monitor workers' performance (Irastorza 2019). This



The digital transition will lead to a shift in occupational risks, with a rising prevalence of psychosocial risks

Figure 5.8 Share of EU workers saying the use of digital technologies in their workplace... (%)



Source: EU-OSHA Flash Barometer Pulse Survey 2022.

is in line with the extensive body of research conducted into the platform economy showing that algorithmic management and digital surveillance technologies contribute to a hectic pace of work, long working hours and isolation (Bérestégui 2021).

The Flash Eurobarometer survey also shows that preventive measures to address psychosocial risks are lacking at company level. Figure 5.9 shows the percentages of respondents reporting that they have access to various types of initiatives aimed at reducing mental health stressors in the workplace. Only 43% of EU respondents say they are consulted about the stressful aspects of their work, with only eight Member States exceeding the 50% mark. This is notably the case for Germany (62%), Austria (60%) and Finland (57%). In contrast, worker consultation is less prevalent in Czechia (26%), Bulgaria (27%) and Portugal (30%). Information and training on well-being and coping with stress is the second most-mentioned initiative at EU level (42%), with the share of respondents having access to such information ranging from 25% in Cyprus and Greece to 69% in Ireland. Even larger variation across the Member States is found for access to counselling or psychological support, with this being available to 74% of respondents in Finland but only 24% in Portugal and Cyprus. At EU level, fewer than one in four respondents (38%) have access to counselling or psychological support.

Figure 5.9 Share of EU workers reporting the availability of measures to address stress at work (%)

	Workers' consultation	Information and training	Counselling or support	Other measures
Cyprus	33	25	24	16
Greece	34	25	27	15
Bulgaria	27	31	26	19
Czechia	26	36	29	15
Slovakia	32	31	28	19
Italy	33	37	29	16
Croatia	34	32	29	23
Spain	34	40	28	18
France	32	38	33	18
Portugal	30	41	24	28
Romania	36	38	33	21
Luxembourg	39	39	29	23
Poland	41	37	35	17
<b>EU27</b>	<b>43</b>	<b>42</b>	<b>38</b>	<b>26</b>
Latvia	39	41	37	37
Hungary	53	35	33	34
Sweden	38	47	41	30
Lithuania	39	44	41	35
Slovenia	49	46	36	30
Netherlands	52	41	43	26
Malta	41	55	48	22
Belgium	51	51	54	33
Estonia	46	52	47	47
Germany	62	53	49	40
Austria	60	52	55	38
Denmark	53	49	68	37
Ireland	56	69	52	45
Finland	57	64	74	44

Source: EU-OSHA Flash Barometer Pulse Survey (2022).

# The EU OSH legal framework and the world of work in transition



Risk prevention and worker protection require continuous risk monitoring

In theory, all the working conditions and changes associated with the transitions should be covered by existing EU legislation. From a legal point of view, the EU OSH legal framework enshrines the general principle of prevention; because this principle is flexible and covers all risks at work, it should offer protection to workers during these transitions. According to the EU's OSH Framework Directive (Directive 89/391/EEC), the employer has an obligation to assess the risks related to all aspects of work, and then to adopt collective and individual measures either to eliminate or to mitigate these risks. The preventive measures should be adopted and implemented after consultation of the workers and/or their representatives. According to the Commission, EU OSH legislation already covers many of the risks that arise from changing industries, equipment and workplaces (European Commission 2021d). Yet is this really the case?

## Digital transition: issues with work equipment, working conditions and management

As underlined above, the technological shift that can be observed will also lead to a shift in occupational risks, with a rising prevalence of psychosocial risks. The digital transition will not only increase existing risks but also call into question certain features and key characteristics of work, and this will also have an impact on OSH prevention and enforcement. Some of the aspects that are likely to be impacted include work equipment, working conditions, work organisation and management (Battista 2021; Stacey et al. 2019).

## Work equipment

Whereas some equipment might reduce certain hazards or exposure levels (e.g. mobile autonomous robots or exoskeletons might assist with manual handling), other risks might be exacerbated. For example, a rise in the number of machines might decrease physical risks but increase cognitive workload. A highly likely outcome is a rise in 'computer-based' jobs, which will increase exposure to certain risks such as musculoskeletal disorders (MSDs) and exposure to screens. Additionally, complexification of machines and software might lead to a lack of transparency in certain situations regarding the functioning of the work equipment, resulting in unforeseen situations or malfunctions triggered by human error, the underlying cause of which is workers' resistance to the introduction of these new technologies. Meanwhile, technology will also be more integrated into and interconnected with workers' direct work environment, not only in the guise of more wearables but also as algorithmic management software. Regardless of whether technology takes the form of a specific machine or robot on the one hand or algorithmic management on the other, there is a risk of work intensification (with an imposed pace, for example). Currently, as required by Directive 89/391/EEC, any measure which may substantially affect the safety and health of workers triggers an evaluation of the risks and a consultation of the workers and/or their representatives. The Directive explicitly provides for the obligation to:

ensure that the planning and introduction of new technologies are the subject of consultation with the workers and/or their representatives, as regards the consequences of the choice of equipment, the working conditions and the working environment for the safety and health of workers (Article 6(3)(c), Directive 89/391/EEC).



In order to exercise a potential right to disconnect, a worker must be in a position to do so

Given the evolving features of these new forms of work organisation, a dynamic approach to risk assessment and evaluation is of fundamental importance. Yet due consideration of the dynamic and evolving dimension of new technologies at work requires a dynamic assessment and evaluation of their present or potential risks. Evaluations and consultations should not, therefore, be carried out only at the time of planning and implementation, but also on a regular basis (every couple of years) and in response to alerts triggering ad-hoc evaluations raised by workers or their representatives.

### **Management of work**

The introduction of new technologies at work will change not only the physical working environment, but also the power dynamics at play. Artificial intelligence (AI) can promote performance pressure and constant oversight (with the attendant constant data collection), resulting in the invasion of workers' privacy. It has also been predicted that the digital transition might lead to constant worker availability, blurring the boundaries between work and private life (EU-OSHA 2021a).

Recent legal revisions have addressed some of the specific risks. For example, the Display Screen Equipment Directive was amended in 2019 and covers different aspects of a workstation (i.e. display screen, keyboard, work desk and work surface, work chair; see Directive 90/270/EEC, Annex 1). The same Directive stipulates that, when selecting software, the employer must ensure that the software is suitable for the task, easy to use and, where appropriate, adaptable to the operator's level of knowledge or experience. Additionally, no quantitative or qualitative checking facility may be used without the knowledge of the workers. Systems must display information in a format and at a pace which are adapted to operators, and, as mentioned previously, the introduction of new technologies should be subject to the consultation of workers and/or their representatives.

Based on the provisions of Directive 90/270/EEC regarding the minimum safety and health requirements for work with display screen equipment combined with the provisions of the EU's OSH Framework Directive, workers and their representatives should be involved in the decision-making process regarding the choice of new technologies and how they are deployed. Given that the pace should be 'adapted' to operators, this infers that it should be possible to adjust the software to workers' capacities. Similarly, the European Social Partners Framework Agreement on Digitalisation,

signed in June 2020, encourages dialogue on how AI should be deployed in the workplace. Worker participation would be the desirable outcome, but it is far from the reality: based on what we are already witnessing, for example in the platform economy, there is no hint of such things as adaptation or customisation. Algorithmic management software imposes a pace on workers, and, even in more traditional employment settings, discussions concerning the implementation of algorithmic management (if they happen at all) are typically conducted on a 'take it or leave it' basis.

The lack of flexibility as regards adaptations to the software interface used by workers might be exacerbated by the provisions of the proposed regulation on artificial intelligence (the AI Act). The AI Act is a horizontal regulation that does not regulate AI as a technology, but rather AI systems being placed on the market or put into service (Ponce Del Castillo 2021). On the one hand, the AI Act imposes certain rules and specific requirements by recognising AI systems intended to be used for the management of workers as 'high-risk' (Annex III, point 4). On the other hand, much criticism has been voiced on the grounds that these requirements do not take into consideration the dynamics of industrial relations, and focus solely on the provider and user (i.e. the employer). There are no provisions mentioning end users (i.e. workers), even though workers are (potentially) going to be the ones interacting daily with the algorithmic management software. Worst of all, the AI Act might act as a ceiling and pose an obstacle to the goals of labour law by limiting the role of workers and/or their representatives (De Stefano and Wouters 2022; Cefaliello and Kullmann 2022).

### **Working conditions**

Another crucial dimension of digitalisation is the challenge posed to the traditional space and time of work. The Covid-19 pandemic has highlighted that it is possible for a lot of workers to perform their work remotely (i.e. telework). However, what the pandemic also showed is that modern technologies allow not only constant monitoring, but also constant worker availability (even at home). Telework or remote work can be an opportunity to achieve a better work-life balance, reduce commutes and increase worker autonomy, but, at the same time, it can blur the separation between professional and private life and lead to overtime (Eurofound 2022a). There are therefore various factors we need to consider: on the one hand, there is the question of whether it is possible for the worker



If the EU legislator adopted the biological limit value of 150 µg/l of blood, it would lead to unequal protection for men and women

to disconnect (directly linked to the question of working time), while, on the other, there is the question of how workers' health is impacted by being constantly available and connected during working time. The right to disconnect is of central importance when addressing these issues: it was tackled in the 2020 Framework Agreement on Digitalisation, and is also a demand supported by the European Trade Union Confederation (ETUC). There is currently no right to disconnect at EU level, and although the right to disconnect is sometimes granted at national level, this takes place through legislation on telework (Eurofound 2022a). While the right to disconnect may not address all the issues involved, it should not be limited to teleworkers. In order to exercise any potential right to disconnect, a worker must be in a position to do so, which means that he or she should have a workload adapted to his or her work time. By way of a complement to the right to disconnect, there remains an urgent need for a directive addressing psychosocial risk factors such as workload, worker autonomy, etc. In the absence of specific legislation, adequate protection will be a national matter or the subject of voluntary bargaining.

The lack of an adequate legal framework might then lead to significant inequalities in the way that these foreseeable risks are addressed. One possibility is that the adequacy of participation and consultation on the impact of digitalisation (in the broad sense of the term) will vary depending on (1) the size of the company and (2) the nature of the employment contract (if any). In small companies or sectors without trade union representation, participation will involve the worker(s) directly and not their representatives. Certain fundamental aspects of key issues might either not be taken into consideration sufficiently (implementation of new technologies) or might be approached on a voluntary and individualistic basis (PSR, workload or telework, for example), meaning that workers in the same situation and the same company might not be able to benefit from the same working conditions. Digitalisation will also have an impact on work in terms of who will work and under what conditions. We are thus running the risk of increasing inequality between workers, and of finding ourselves in a situation where those already benefitting from strong industrial relations or bargaining power (either individually or collectively) will be able to negotiate terms and conditions that truly benefit them, but more vulnerable workers who do not have these bargaining positions or leverage will be unable to rely on a floor of rights.

## Green transition

As illustrated by the previous sections on PSR and asbestos exposure, the green transition will have major impacts on workers' health and safety. Innovation is and will be needed to navigate the green transition and establish 'green jobs'. However, we need to guarantee that these jobs (which are vitally important for the green economy) are decent and safe, and provide healthy working conditions. Green jobs can be defined as:

jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; decarbonise the economy; and minimise or altogether avoid generation of all forms of waste and pollution (EU-OSHA 2013: 21).

Many sectors will be impacted by the collective effort to de-carbonise and minimise waste. As mentioned previously, the 'renovation wave' will expose workers to asbestos even though this substance is already banned in Europe. Another striking example of a problem that may worsen in the coming years is lead exposure. The promotion of electrically powered cars and public transport in the interests of reducing pollution and fossil fuel use will boost the need for electric batteries, and one component of these batteries is lead. More workers will thus be exposed to lead, not only during the production of the batteries but also during their recycling (as part of the circular economy).

The European Commission recognised the need to revise the current exposure values for lead in its Strategic Framework 2021-2027. Accordingly, in an opinion issued on 11 June 2020, the Committee for Risk Assessment of the European Chemicals Agency (RAC/ECHA) recommended the adoption, under the Chemical Agents Directive (CAD), of both an occupational exposure limit (OEL) of 4 µg lead/m<sup>3</sup> and a biological limit value (BLV) of 150 µg lead/l blood. RAC/ECHA also recommended adding a qualitative statement in the Chemical Agents Directive to the effect that the exposure of fertile women to lead should be avoided or minimised in the workplace because the proposed biological limit value for lead is not protective of the offspring of women of childbearing age. Therefore, if the EU legislator adopted the biological limit value of 150 µg/l of blood, it would lead to unequal protection for men and women that could be considered discriminatory due to the risk that women might be treated less favourably than men on



the labour market (especially in terms of access to employment). For instance, it could create a situation where women could not be hired in workplaces where they might be exposed to lead, since employers would wish to avoid any risk or liability. Therefore, even if the biological limit value of 150 µg/l appears neutral at first glance, it would put women at a particular disadvantage compared to men, for example as regards access to employment and labour market integration.

The procedure aimed at revising the occupational exposure limit values (OELs) for lead and its compounds in the Chemical Agents Directive may still be ongoing, but it gives us a clear warning that we ought to be extremely careful in the coming years to ensure that legislation provides equal and adequate protection to workers who are going to play an essential role in the green transition.

Exposure to asbestos and lead are only two examples: there are many more factors and types of exposure that should be taken into consideration in the context of the green transition. However, these two examples alone show that it will not and cannot be solely a matter of following a general principle of prevention (as has been emphasised for the digital transition); instead, we should also ask questions about the production process.

As in the case of digitalisation, we also need to be vigilant that the jobs created by the green transition are not precarious. Otherwise, we risk seeing a repeat of what we witnessed in the early days of the platform economy, namely the rise of the 'digital precariat', this time in the form of a 'green precariat' resulting from the unregulated or deregulated development of the economic and business opportunities linked to the green transition.

# Conclusions

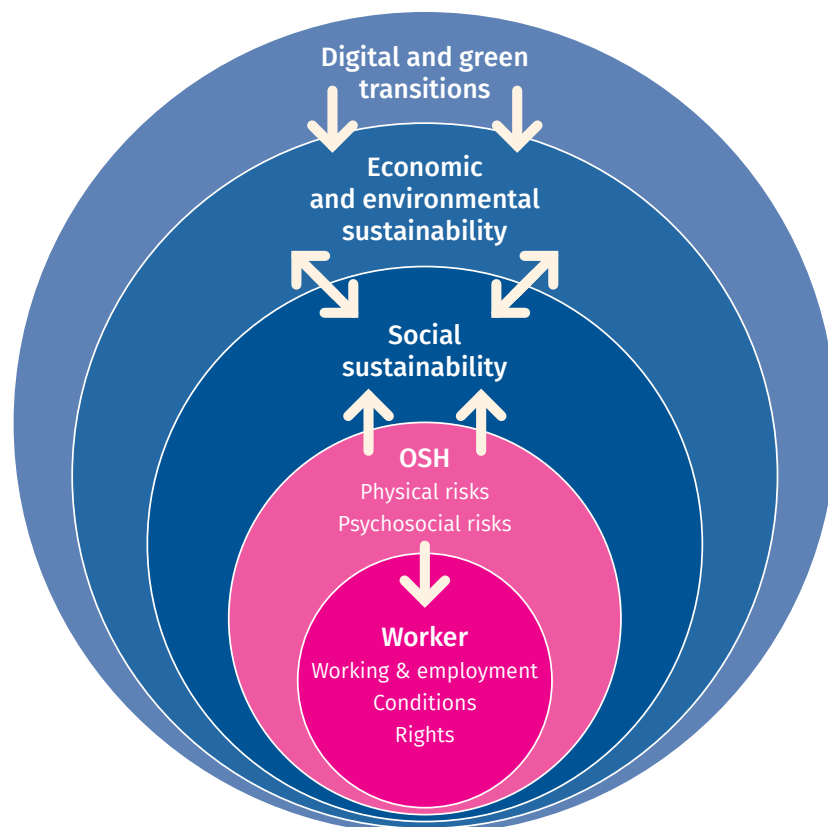
Industrial changes have always had an impact on workers' health and safety, by changing either the methods of production (e.g. new technologies) or the types of work performed (e.g. the development of new service sectors and green jobs). In the context of the current digital and green transitions, work will and already has been impacted, and this is also reflected in the priorities of the EU OSH Strategic Framework (2021-2027).

This chapter's analysis of worker exposure to asbestos and psychosocial risks makes it clear that vigilance in respect of OSH-related matters is necessary in the changing world of work due to the impacts of the digital and green transitions. The social dimension of sustainable development should become the top priority because it directly affects the opportunities for other developments (Ivascu et al. 2019). OSH is also a primary concern in terms of social sustainability, since worker welfare is one of the main aspects of operating in a socially responsible manner (Kordi et al. 2021).

This chapter's analysis of the nexus of social sustainability and OSH in the context of the twin transition highlights some key elements against which the success and fairness of the processes can be benchmarked. The following four areas emerge as relevant:

**Firstly, continuous collection of OSH data and monitoring of the impacts of the transitions are essential to prevent inequalities in worker protection.** Forging ahead with the twin transition in a just and socially fair manner will be possible only if the safety of all workers is guaranteed. For example, there are clear discrepancies between the EU Member States in terms of work-related accidents and deaths; the European Union Agency for Fundamental Rights (2019) has raised the alarm about the severe labour exploitation of migrant workers in the construction sector; algorithmic management obstructs worker participation; and emerging evidence is highlighting the possibility that home-based telework might have gendered health impacts due to the increasing trend

Figure 5.10 The interconnectedness of OSH with sustainability and the twin transition



Source: Authors' own elaboration.

towards precarity and work-life balance issues (Eurofound 2020b; López-Igual and Rodríguez-Modroño 2020; ETUI and Cambridge Econometrics 2022; Arabadjieva and Franklin 2023). It is thus essential to have in place an adequate legal framework that guarantees the rights and protection of all workers, and to analyse OSH within an intersectional framework that accounts for disparities such as socioeconomic status (education, income, type of job), age, ethnicity and migration status or background, as well as sectoral differences. By recording and analysing workers' lived experiences, any shortcomings can be overcome and blind spots more easily identified – a process that is essential to the achievement of just and inclusive worker protection.

**Secondly, vertical and horizontal segregation in the labour market attests to the importance of consistently applying a gender perspective to health and safety at work.** This chapter's analyses highlight the fact that different types of hazards and risks (both physical and psychosocial) exist in parallel, and workers can experience greater exposure to specific types depending on their job. The construction industry is highly male-dominated, with an average female participation rate of only 4-6% (Clarke 2021), while a higher percentage of home-based teleworkers were women before the pandemic (57%) (Eurofound and ILO 2017); 41% of women reported having started working from home during the pandemic compared to 37% of men (Sostero et al. 2020), and the trend is expected to continue (Arabadjieva and Franklin forthcoming 2023; Eurofound 2022). Yet this is not the whole story. Although occupational asbestos exposure is most often identified among men working in sectors where women are less likely to be employed, an association has also been established between work-related exposure to asbestos in its multiple forms and ovarian cancer (Camargo et al. 2011; Vicente-Herrero et al. 2021). As in the case of PSR, exposure to the different risk factors is gendered; for example, data concerning job quality in terms of working time show that men are more likely to be exposed to long hours of paid work and high work intensity, while women's health is impacted to a much greater extent by work-life conflicts and lack of autonomy (Franklin et al. 2022). What can be observed is that the hazards (i.e. exposure to the relevant chemical or PSR) are the same for women and men, but the sources from which the exposures arise are different.

**Thirdly, adopting a life course approach to work and health is essential, as some occupational diseases take time to develop.**

There is usually a long delay between the first exposure to asbestos and the onset of the associated disease, and work-related stress can cause psychological and physical harm through prolonged exposure. The Vision Zero approach to work-related deaths thus requires the development of risk assessment tools and robust prevention measures that protect workers from both immediate and delayed morbidity and mortality due to exposure at work. More effective and holistic means of measuring the work-relatedness of illness and injury is also important, as it can support the development of preventive strategies (Walters et al. 2021).

**Fourthly, the general principle of prevention enshrined in the EU OSH legal framework remains fully applicable.**

The transitions will fundamentally change where we work, how we work, who will work and how people will perceive work (EU-OSHA/Stacey et al. 2019). Problems can arise from the collateral risks, and it is these situations and hazards that we need to tackle now to guarantee a proactive rather than a reactive approach. In this rapidly evolving context, risk prevention and worker protection require continuous risk monitoring and assessment and greater worker participation in the implementation of any changes, whether related to digitalisation or the green transition. Anticipating the issues and difficulties that workers may encounter will also leave room for EU OSH legislation to be adjusted or complemented if necessary. Finally, a safe and healthy working environment is a worker's right and an important part of social sustainability. In June 2022, safety and health were included in the Declaration on Fundamental Principles and Rights at Work of the International Labour Organization (ILO 2022), and it is evident that organisations cannot be sustainable without protecting the safety and health of their workers (IOSH). Not only from the perspective of rights, but also from a functional perspective, a socially responsive transition with equity of worker protection and rights must be the point of departure for the workplaces of tomorrow.

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