European Agency for Safety and Health at Work

Foresight Study on the Occupational Safety and Health Implications of Future Climate Change-Related Developments and Crises

Summary

European Agency for Safety and Health at Work

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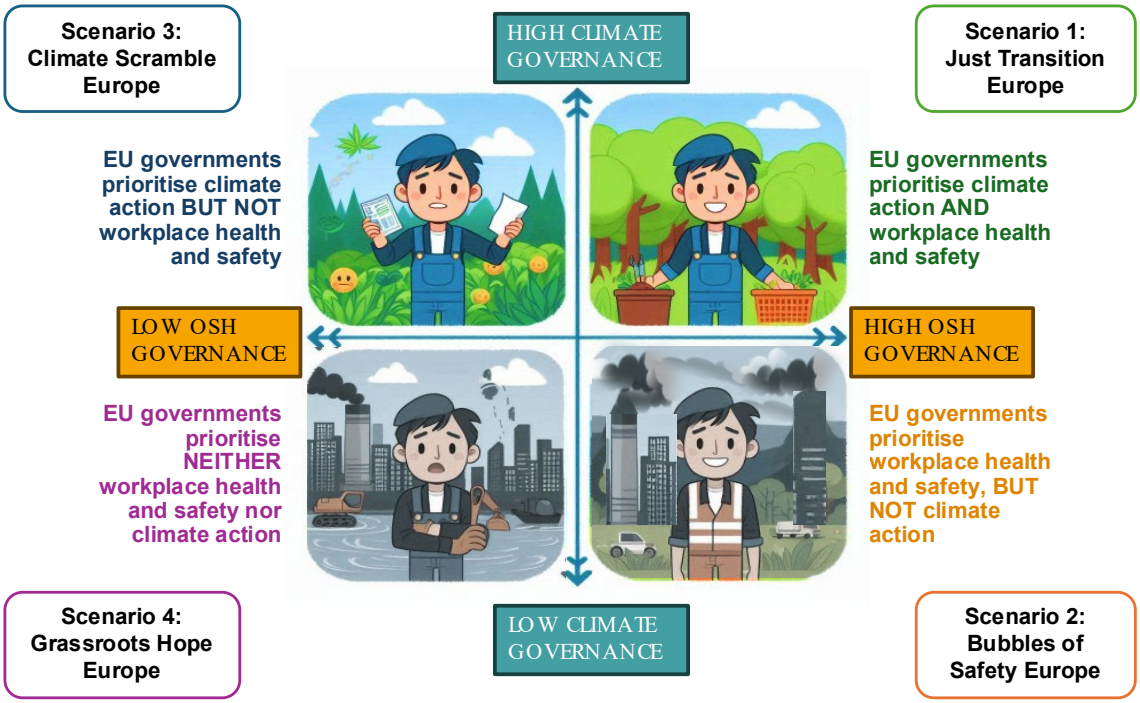
1 Introduction

1.1 Project background

The European Agency for Safety and Health at Work (EU-OSHA) based in Bilbao, Spain, plays a pivotal role in making working life across the European Union (EU) safer, healthier and more productive. One key aspect of its work is anticipating future changes in the world of work by undertaking foresight studies, which inform policymakers, researchers and workplace stakeholders about emerging occupational safety and health (OSH) risks and help set research and action priorities. This report presents the outcomes of EU-OSHA's fourth foresight cycle, which was delivered by RAND Europe in partnership with the Insight Foresight Institute (IFI) and the support of the Austrian Institute of Technology (AIT) as part of the Foresight-on-Demand consortium. The focus of the cycle was OSH challenges and opportunities related to climate change and crises. Through the development, exploration and analysis of future scenarios, this study aimed to explore the **potential indirect impacts of climate change on OSH and the nature of work in Europe over the next 10 to 25 years.**

The study adopted a structured foresight methodology, integrating various research methods. It started with a scoping literature review to identify climate-related trends and factors relevant to OSH, with a particular emphasis on indirect effects such as technological adaptation, migration and economic instability. This was followed by an expert survey distributed to a broad spectrum of stakeholders – including those from academia, industry, policy organisations and trade unions – who were asked to evaluate and discuss the importance of the factors identified. Finally, two scenario development workshops were held with the same 20 experts to collaboratively create and refine four future scenarios related to climate change and OSH governance, establish a shared vision for 2050 and map implications for OSH stakeholders.

Scenario development can be structured in various ways. Given the complexity and scope of the study in question, in this case, the research team anchored the scenarios in two key dimensions: **climate governance** and **OSH governance**. Each of these dimensions is a continuum and can be high or low, so when they are intersected they form the basis for four distinct scenarios, as shown below.



Rather than serving as forecasts, the scenarios presented in this study are structured investigations into potential futures. They are intended to illuminate the choices, challenges and opportunities that could emerge as Europe responds to the dual imperatives of tackling climate change and safeguarding the health and safety of workers.

1.2 The four scenarios reflecting the wider implications of climate change on OSH

- **Scenario 1: Just Transition Europe**

Europe in 2050: Europe has achieved ambitious, coordinated climate action, with strong partnerships and widespread public support for sustainability. The green transition is well underway, lifestyles are more environmentally friendly, and cities are designed for resilience and wellbeing.

World of work: Traditional industries have been transformed or replaced by green sectors, creating new jobs in areas such as renewable energy and urban farming. Migration helps fill gaps in the workforce, and technology is used strategically for social value. While most people benefit, some workers and businesses struggle to adapt.

OSH: OSH is a top priority, embedded in policy and workplace design. New roles focus on holistic wellbeing, and risks are proactively managed. However, some old hazards persist, especially for smaller businesses and those in physically demanding jobs.

- **Scenario 2: Bubbles of Safety Europe**

Europe in 2050: Climate change has largely gone unchecked, and Europe has adapted through rapid technological progress. Society is divided: a small, highly skilled workforce thrives, while most people rely on universal basic income.

World of work: Automation has eliminated many jobs, leaving only a minority in work – mainly in technical or interpersonal roles. These valued employees enjoy a high status and security, while the majority face unemployment and social challenges.

OSH: For those in work, OSH protection is excellent, with safe-by-design jobs and advanced health monitoring. However, these standards do not extend to global supply chains or informal work, and the divide between elite workers and the rest of society is stark.

- **Scenario 3: Climate Scramble Europe**

Europe in 2050: After delayed action, Europe is now rushing to address severe climate crises. The focus is on rapid green transition, often at the expense of worker protection. Migration to more liveable regions is widespread, putting a strain on resources and infrastructure.

World of work: There is a boom in green industries and manual labour, especially for migrants and low-skilled workers. Working conditions are intense and often hazardous, with little incentive for employers to improve pay or safety due to an oversupply of labour.

OSH: OSH is deprioritised as governments and businesses focus on climate targets. Many workers face increased risks, accidents and stress, especially in new or rapidly changing sectors. Productivity suffers as health and safety are neglected.

- **Scenario 4: Grassroots Hope Europe**

Europe in 2050: Years of war and neglect have left Europe fragmented and depleted, with little coordinated action on climate change or OSH. Public health systems and wider societal infrastructure are in decline, but grassroots movements are emerging to rebuild community resilience.

World of work: The formal economy is stagnant, with high unemployment and insecurity. Many people turn to informal, community-based roles that prioritise local needs and mutual support, offering a sense of purpose outside traditional employment.

OSH: OSH is largely neglected by governments and businesses, leading to poor working conditions and frequent accidents. However, some grassroots organisations and cooperatives are beginning to prioritise worker wellbeing and safety within their communities.

1.3 Key takeaways

Several overarching insights emerge from the analysis of the key factors, trends and scenario development. The OSH landscape in Europe is being fundamentally reshaped by the multifaceted impacts of climate change. Rather than a single, linear progression, the future is characterised by a complex interplay of economic, technological, social and regulatory forces – each introducing new risks and opportunities for workers and workplaces.

- **Addressing climate change is important, but so is OSH**
  Neglecting OSH in the pursuit of sustainability risks undermining both worker wellbeing and the resilience needed for a successful green transition. A proactive integration of OSH into climate strategies is essential for safeguarding health, safety and productivity.
- **Transformation brings both opportunity and risk**
  The shift to a low-carbon, circular economy is dismantling some sectors as it creates new ones, leading to job creation, displacement and the emergence of new occupational risks. Rapid technological change and the adoption of green solutions demand new skills and up-to-date safety frameworks, and they also introduce unfamiliar hazards.
- **Vulnerabilities and inequalities may deepen**
  Both climate change and climate action can widen social and economic divides, especially for vulnerable groups such as migrants, older workers and those in precarious or informal employment. Without inclusive policies and targeted support, these populations risk being left behind or exposed to greater OSH risks.
- **Governance and collaboration have a key role to play**
  Coordinated action across governments, employers, workers and intermediary bodies is critical. Adaptive, evidence-based regulations and cross-sector partnerships can help anticipate and manage emerging risks, ensuring that OSH and climate objectives are aligned and mutually reinforce each other.
- **Monitoring and research can help mitigate risks**
  The pace of change and the complexity of new risks require ongoing research, monitoring and scenario planning. Early identification of hazards and a culture of prevention will be key to maintaining safe and healthy workplaces in a climate-altered future.

1.4 Shared vision and key trade-offs

Through scenario analysis and stakeholder input, we have developed a ‘Shared Vision for 2050’. This describes an aspirational future for Europe where workplaces are safe, healthy and sustainable, and where climate action and OSH governance are given equal importance. According to this idealistic vision, by 2050 workplaces will be safe, inclusive and climate-resilient. OSH will be fully integrated into sustainability strategies, innovation ecosystems and governance frameworks. This future will depend on aligning workers’ wellbeing with environmental goals, ensuring that transitions will be not only green, but also just to fair for all. However, achieving this vision involves navigating complex trade-offs. Employers may face tensions between profitability and precaution, especially under resource constraints. Policymakers will have to balance technocratic efficiency with democratic legitimacy, ensuring that reforms are inclusive and trusted. Innovations should be both ethically grounded and economically viable, otherwise Europe risks losing global competitiveness and failing to inspire a broader adoption of its model. Without deliberate coordination between sectors and across borders, the promise of a just transition may remain aspirational rather than actionable.

1.5 Implications for stakeholders

The transition to a climate-resilient and safe world of work in Europe will require coordinated, proactive engagement from all key stakeholders. Governments and policymakers are in a position to bridge the gap between OSH and climate governance, ensuring that the health of workers is embedded in climate strategies and that regulations remain adaptive and inclusive as new risks emerge. Employers and

organisations are encouraged to integrate OSH considerations into their sustainability agendas, not only inorder to comply with evolving regulations but to foster resilience and competitiveness. This is especially important when supporting vulnerable groups and monitoring the risks associated with new technologies and materials. Intermediary bodies, such as trade unions and professional associations, play a vital role in translating high-level policy into practical guidance, advocating for inclusive approaches, and facilitating dialogue across sectors. Workers themselves are recognised as active agents of change, whose participation in governance, risk monitoring and peer-to-peer awareness-raising is essential for building resilient workplaces and communities. Finally, researchers and innovators are tasked with advancing interdisciplinary research and developing ethical, human-centred technologies that support both climate and OSH goals.

2 Conclusions

Climate change is not only an environmental challenge, but also a profound disruptor of labour markets, industries and workers' wellbeing. The scenarios explored in this study are not predictions. They are structured explorations of possible futures, highlighting the trade-offs, risks and opportunities that may arise as Europe addresses both climate change and worker safety. The key message is that addressing climate change is essential for society's survival, but it is equally vital to ensure that the workforce driving this transition is protected from the direct effects of climate change and from the indirect effects of the transition itself.

The European Agency for Safety and Health at Work (EU-OSHA) contributes to making Europe a safer, healthier and more productive place to work. The Agency researches, develops and distributes reliable, balanced and impartial safety and health information, and organises pan-European awareness raising campaigns. Set up by the European Union in 1994 and based in Bilbao, Spain, the Agency brings together representatives from the European Commission, Member State governments, employers' and workers' organisations, as well as leading experts in each of the EU Member States and bevond.

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