FutuResilience
Building sustainable futures together

POLICY BRIEF #2
JANUARY 2025

STRENGTHENING LABOUR FORCE RESILIENCE TO FACE FUTURE CHALLENGES

Key Points

Labour market shocks pose a significant threat to Europe's social and ecological stability. To address these challenges, it is essential to involve workers in shaping the design of future work technologies, which includes prioritising manufacturing jobs to make digital and sustainable transitions possible and to ensure better and more sustainable employment opportunities. Addressing skill gaps is central to societal resilience, enabling individuals to navigate economic, technological, and environmental changes effectively.

Initiatives such as the **FutuResilience FICTIONS Lab** demonstrate how digital technologies can transform workplace dynamics while prioritising worker well-being and inclusivity.

- **Participatory approaches** are crucial for capturing workers' expectations, fears, and needs when facing disruptive technological change.
- **Workforce training** addresses skill gaps and ensures a deeper understanding of the transformative forces impacting labour markets.
- Recognising the interconnected dimensions of workplace well-being, human-centric approaches should prioritise the development of **tailored technological solutions**.
- **Speculative design** is a valuable strategy, encouraging workers to think creatively and engage in debates about complex labour market challenges, fostering resilience and adaptability in the face of change.

Introduction

The FutuResilience project aims to strengthen European economic and social resilience through an enhanced ability to respond quickly to future crises. **Labour market shocks** are a significant threat to the European social and ecological environment and can worsen workers' well-being. The manufacturing sector is one of the most worrisome sectors, with **high labour shortages**. In the face of such labour crises, there is a need for new approaches to build resilience in the sector.

This policy brief aims to identify the need for resilience-building policies in the area of digital skills development in the workplace, learning from the outcomes of the FICTIONS Lab. The topic of building and using digital skills represents a key component for both employers and employees to address the disruptive nature of digital technologies and to reap their full advantage. Indeed, **addressing skill gaps** is vital for building societal resilience by equipping citizens with the competencies needed to adapt to economic, technological, and environmental challenges. The participatory and human-centred approaches put in place in the FICTIONS Lab might represent a prototype for similar actions in similar or different contests.

Building resilience in the labour force

Shocks to labour markets represent a significant threat to **social cohesion** in the EU and constitute one of the main issues to be addressed to achieve a just transition, as mandated by the European Green Deal. Shocks arise both from policy-driven structural changes (e.g., the progressive phase out from fossil fuels) and from existing and emerging trends, including disruptive technological change, alterations to the preexisting geopolitical environment, the tertiarisation of developed economies, exogenous shocks such as pandemics, and demographic changes. Workers employed in the **manufacturing sector** are particularly exposed to these changes because of the rapid diffusion of automation and **new technologies**, disruptions in global markets for output and critical inputs due to geopolitical changes, and the high emission and material intensity of manufacturing sectors, which call for stringent environmental policies to reduce pollution and achieve net zero emissions by 2050. Moreover, the pervasive adoption of new technologies influences the relative demand for skills in manufacturing sectors, leading to the contemporaneous presence of skill obsolescence and skill gaps. While **skill obsolescence** is a driver of socioeconomic inequalities, **skill gaps** could represent a significant bottleneck for fully deploying private and public investment to transform European industry.

These challenges call for novel and innovative approaches to building resilience in labour markets. While **traditional labour policies** (e.g., unemployment benefits, employment protection legislation, active policies, retraining, etc.) still represent the backbone of labour market resilience, **novel and tailor-made approaches** are needed for workers to cope with the highly uncertain consequences of digital and automation technologies for their jobs and to improve their well-being.
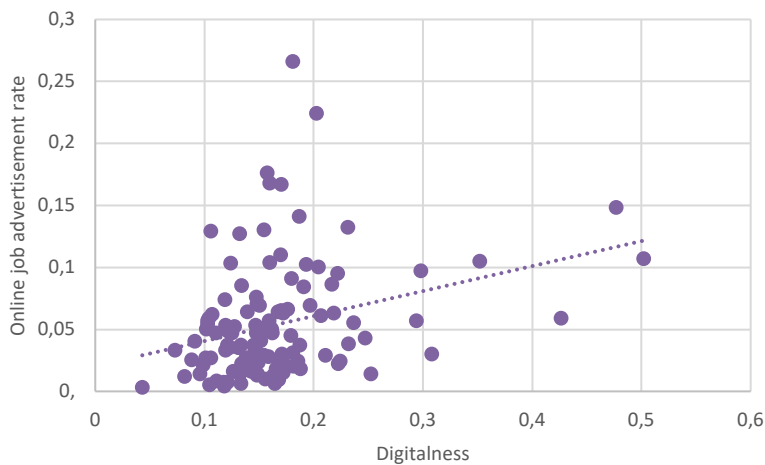
Figure 1. Open vacancies in occupations by level of 'digitalness' (Source: own elaboration on Eurostat and Cedefop – Skill-Ovate data for year 2023)

In this respect, **providing workers with digital skills** is critical to contribute to the resilience of the labour force. The pervasive diffusion of digital technologies across all sectors of the economy increasingly affects the task composition of occupations and, consequently, the demand for different skills . At the same time, this leads to skill obsolescence and scarcity. According to the most recent data from Cedefop and Eurostat, a robust correlation was found in 2023 between the degree of 'digitalness' of occupations and the rate of open (i.e., not yet filled) vacancies in the EU, suggesting large digital-skill gaps in the EU labour market.

The EU recently approved the **European Skills Agenda** to foster developing digital and sustainable skills with the aim of facilitating the twin (green and digital) transition and ensuring social fairness. This policy sets quantitative targets and identifies key priorities to develop digital skills through actions to improve educational, training and lifelong learning systems in the EU.

The FICTIONS Lab is a great example of an approach that involves leading users through **experimental training** to envisage probable and disruptive scenarios involving skill gaps and to develop speculative designs for depicting future technological solutions to address skill gaps and improve workplace well-being.

Digital technologies in the manufacturing sector: the FICTIONS Lab

The **FICTIONS Lab operates in North Portugal**, which is the most industrialised area in the country. The workers involved in the lab were recruited from the Portuguese engineering and construction company Domingos da Silva Teixeira, S.A. (dst), and the lab activities were led by Fraunhofer Portugal AICOS, a not-for-profit research centre on digital technology.

The FICTIONS Lab explores **how digital technologies (e.g., large language models and cobots) can transform workplace dynamics, emphasising worker well-being and inclusivity**. The lab also considers the overlap of technological changes with other changes in the workplace, including cultural shifts, demographic changes and safety, with the aim of better understanding whether and how nontechnological issues interact with technology. A survey of industrial workers revealed a **generally positive attitude towards automation**, paired with **concerns about job monotony** and **skill dispensability**. Workers identified safety, efficiency, and communication as critical areas expected to significantly impact automation. Three **clusters of workers** were identified:

- **Novice technology users**, who have minimal experience with technology in the workplace;
- **Change-averse workers**, who fear increased isolation and the disposability of their skills;
- **Safety advocates**, who foresee enhanced physical safety and a pressure-free work environment.

Follow-up **workshops with stakeholders** explored systemic challenges, such as health, migration, and societal integration, using creative exercises to address future workplace scenarios. A selected group of thirteen workers received **training** on cyberphysical systems, human–machine interactions, and artificial intelligence. These training sessions underscore the need for frequent training, adaptable leadership, and simpler, universally accessible technology.

A key feature of the FICTIONS Lab is the use of **speculative design**, a practice aimed at exploring future possibilities and impacts of, among other things, emerging technologies to trigger debates about the future. Four workshops facilitated speculative design exercises and policy discussions.
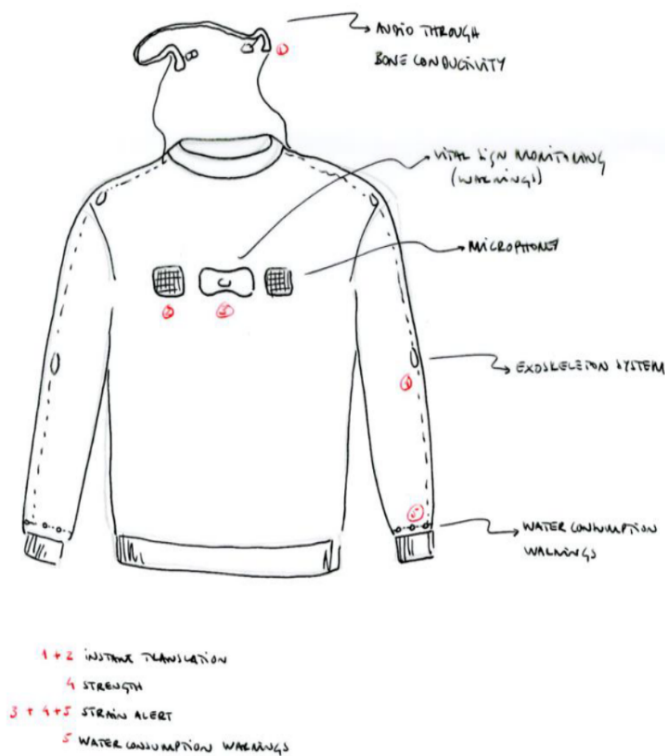
Figure 2 Speculative design of a human-centred technology embedded into a sweater (source: Fictions lab)

Workers collaborate on addressing factors such as aging, resource availability, and migration through creative tools such as collages and futuristic prototypes to imagine the future of their workplace and develop human-centred digital technologies to improve workers' well-being in a changing world. For example, a **provocative prototype** consisted of a sweater equipped with i) an instant translation from/to a foreign language using a microphone and a bone conduction headset; ii) vital sign monitoring with warnings; iii) an integrated exoskeleton for upper limbs; iv) water consumption warnings. These exercises allowed the workers to experience future technology as it is today and reflect more deeply on its implications for their jobs and their skills in a deeper way. For instance, through these exercises, workers considered that occupational safety and health regulations would need to change in the face of emerging technologies at work. While imagining themselves wearing these technologies, workers concluded there was a risk that some technologies contributing to improving physical health (e.g., facilitating communication on the job) would, on the other hand, constitute a risk for mental health (e.g., surveillance).

Policy implications and action items

The future of work will be significantly impacted by issues such as ageing, migration, resource availability, recognition and safety at work. These elements can be evaluated in the context of the current workplace to determine how they affect it. The FICTIONS Lab proposes an **innovative approach** to understanding and improving the integration of digital technologies in the workplace. It highlights the importance of workers' participation, tailored training, and policies that promote inclusiveness and well-being in the context of automation. The project also emphasises the need to **address workers' diverse needs and prepare them for future challenges posed by technological advancements**.

These findings lead to **four concrete policy actions**:

- **Participatory approaches** are needed to understand the expectations, perceptions, fears and needs of workers who face disruptive technological change.
- **Training** represents a crucial component of workforce resilience, contributing to filling the skill gap; however, it is also a prerequisite for workers to genuinely understand the nature of the changes affecting labour markets.
- Technology is deeply connected to other dimensions of workplace well-being. **Human-centric** approaches to developing **tailor-made technological solutions** should consider all these dimensions.
- The application of a **speculative design** is a promising strategy to induce workers to think 'out-of-the-box' and to fuel debate about complex challenges.

Project Identity

Project Name	Creating FUTUre societal RESILIENCE through innovative, science-based co-creation labs **[FUTURESILIENCE]**
Consortium	**[Coordinator]** European Future Innovation Systems (EFIS) Centre – Belgium; NTNU Social Research – Norway; Fraunhofer ISI – Germany; University of Ferrara – Italy; University of Urbino – Italy; Maastricht University – Netherlands; Regional Development Institute – Greece; Polytechnic University of Cartagena – Spain; Copenhagen Institute for Future Studies – Denmark; Foresight Centre at the Riigikogu – Estonia; Mid-Sweden University – Sweden; Bulgarian Association of Personalised Medicine – Bulgaria; Municipality of Murcia – Spain; Municipality of Chios – Greece
Funding Scheme	**Horizon Europe /** HORIZON-WIDERA-2022-ERA-01: An experimentation space for the uptake and use of R&I results for EU resilience and future preparedness
Website	www.futuresilience.eu
Duration	36 months (January 2023 – December 2025)
Budget	€2,889,406.25

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