

WHAT COMES AFTER?

BEYOND4.0 supports an inclusive European future via examining the impact of Industry4.0 and the Digital disruption on the future of jobs, business models and welfare.



POLICY BRIEF

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Digital Transformation Requires Trust in the Learning Citizen

BEYOND4.0 supports the delivery of an inclusive future of decent work and decent lives for EU citizens in the context of technological transformation. Funded by the Horizon 2020 programme, BEYOND4.0 examines the impact of new digital technologies on the future of jobs, business models and welfare in the European Union (EU).

This tenth Policy Briefing summarises the main contribution of the BEYOND4.0 project. This Policy Briefing will be our last contribution as a project to the debate on digital transformation and an inclusive European future. We will continue to discuss on our Twitter/X-account.

Key findings and recommendations

Current economic and labour market policies are placing significant emphasis on digital technology as a central catalyst for change. However, this approach gives rise to intriguing paradoxes that challenge conventional expectations. Instead of encountering the anticipated scenario of widespread unemployment, we are witnessing a substantial increase in employment on a large scale. What was once feared as a potential source of polarisation in the labour market is now proving to have the opposite effect.

This notable shift poses a conundrum for policymakers, as it deprives them of the conventional benchmarks for formulating effective economic policies. Rather, the recently concluded H2020 BEYOND4.0 project illuminates fresh opportunities on the level of individual enterprises and broader

regions. In this context, it becomes imperative to recalibrate business policies with a focus on a human-centric approach, placing individuals at the heart of the business ecosystem. Simultaneously, effective regional policies demand a concentration on nurturing entrepreneurial ecosystems that enhance a region's overall resilience and growth. Labour market policies should align with this transformation, centring around the creation of a participation income that incentivises citizens to contribute to societal improvement in diverse ways.

These findings have translated into concrete policy recommendations that prioritise cultivating partnerships at the firm level, fostering entrepreneurship at the regional level, and actively exchanging knowledge and experiences at the European level. The notable aspect of these recommendations lies in the intentional inclusion of a calculated element of risk. Nevertheless, this risk is a conscious decision aimed at instilling confidence in policymakers to place trust in the engagement of workers and citizens. Indeed, these stakeholders are enthusiastic about contributing to a shared future, and it is precisely this trust that can serve as a catalyst for sustainable growth and progress.

Digital Transformation and Growing Policy Uncertainty

The H2020 BEYOND4.0 project had as its objective to understand the impact of the digital technological transformation on work, social security and inclusive policies. The project started, in 2018-2019, in a context of policy uncertainty about the impact of digital transformation. Artificial intelligence, robots and connected technologies presented themselves as opportunities to dynamise businesses. Policy supported these developments with the Industrie 4.0 policy. Academic discourse in the pre-COVID



period pointed to the risk of mass unemployment with this transformation. The digital revolution would be accompanied by the disappearance of manual work, but also the elimination of a lot of intellectual work. Artificial Intelligence and Connected Technologies would allow even this high-level work to disappear. The COVID-19 pandemic then struck, and thanks to massive interventions by governments to support businesses, unemployment growth remained limited. In many European countries, meanwhile, there was no sign of the predicted digital technology shock. On the contrary, some countries such as the Netherlands ended up in a situation where job vacancies outnumbered the unemployed. An explanation in which technology is the culprit of what is happening in the labour market seemed unrealistic then and seems unrealistic now.

What we could also observe is that differences in economic performance between regions appear to be sustainable. Despite the digital revolution, regions like London, the South of Germany, Paris, and the South of the Netherlands, and others, continue to show strong economic growth. These regions appear to be centres of new entrepreneurship that seem to defy any economic law.

So what is an analysis that works? How can we make sense of these various developments?

The same scholars who pointed out the risks of digital technology also formulated profound advice on how policy should deal with the coming situation of mass unemployment. They outlined the contours of a new social security system. Universal Basic Income (UBI) should replace the activating labour

market policies that have dominated Europe since 2000. Such a proposal stirs tempers. Few societies are willing to give people financial benefits without anything from the recipient in return.

For policymakers, this context is extremely confusing. Should we now pull out all the stops to prepare for major problems in the labour market? But why then are we seeing unseen high labour market participation rates across countries? Is digital technology now a risk or an opportunity? Should policies do something with digital technology? Or should we focus mainly on the effects side? Does UBI mean the death of activating labour market policies? All these questions were posed before the H2020 BEYOND4.0 project started.

H2020 BEYOND4.0: A Multi-Disciplinary and Multi-Level Approach

The project title is *'Inclusive Futures for Europe BEYOND the impacts of Industry 4.0 and Digital Disruption'*. The aim of the project team was to develop a comprehensive understanding of the impact of digital transformation. The starting point of the analysis was the different manifestations of digital transformation. First, there was the progressive rationalisation in industry, more commonly known as the rollout of Industrie 4.0. Then, there was the growth of platform companies such as Google, Facebook and Amazon, among others. Both developments pointed to sharp changes in labour markets. Situating these developments is one thing, but underpinning the research with sufficient and reliable data is another. Although a lot of data is collected in Europe on what is happening in companies in workplaces and in the labour market, this data is hardly accessible. This is surprising, especially if policymakers want to solve (or have solved) the policy confusion we point out.



To provide a new perspective on digital transformation, the project took a number of steps. The first step was to better understand why current scientific approaches actually provide little insight into what is currently happening within firms and labour markets. To do this, we deployed historical research, as well as a re-analysis of the dominant approach in technology research. That approach is known as the 'task-based approach'.

The second step was to deploy different research approaches to map societal developments. This first involves an in-depth analysis of available European labour market data. As indicated, this data is not available at the level of analysis we wanted, namely at the level of company and employee. For that, we had to apply aggregation methods to generate meaningful and insightful information with the available data. A second approach focused on what happens within different European regions. This involved analysing how those economic regions work. As the focus was on entrepreneurship development, the approach of entrepreneurial ecosystems was chosen. The question is then how regions are able to reinvent themselves, with new companies and new jobs. To what extent does digitalisation help with this? These regions also provided the context for examining what is happening within companies. In the end, some 30 companies were included in the study, where company-level and employee-level research was conducted.

A third step focused on the effects of digital transformation. The topic of skills is central to a lot of analysis on digital transformation. We pointed to that when we talked about the task-based approach. In essence, the task-based approach says that the change in skills favouring social, emotional and creative tasks determines the likelihood of task automation. The more of these tasks, the lower the probability of automation. The analysis of skills in BEYOND4.0 focused on conceptualising how skills are best portrayed and checking the trends in the cases and surveys. Besides focusing on skills, we focused on available experimental data on universal basic income.

The different steps yielded a variety of results. In interpreting the results, we also entered into discussions with quite a few stakeholders. This was then mainly done in the context of regions and companies.

Research Findings at Different Levels

The various studies have produced a broad set of results. We highlight some of these results here, in line with our starting observation, namely that policymakers face uncertainty as to what is actually happening with digital transformation. For completeness, we indicate that this is a limited selection of results. Other results have already been covered in earlier policy briefs. We recommend you check them out. We start first with our observation that technological development should be viewed differently from a shift in tasks. A core result of the project is the importance of 'learning capacity' to make companies more innovative. With these results, we better understand what is happening at the workplace and organisational level. The third result we want to point out in this policy brief is the importance of entrepreneurial ecosystems.

Rethinking the Task-Based Approach

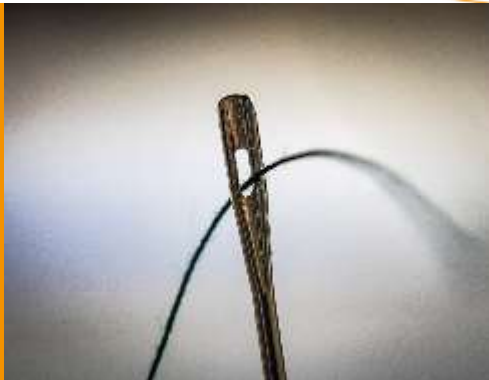
Initial scientific and policy thinking focused on the occupations that were claimed to be in danger of being destroyed by the new digital technology. Subsequent analyses, including by the OECD, World

Economic Forum and European Commission agencies, such as Eurofound, adopted a task-based approach. This approach suggests that by focusing on shifts in tasks within occupations, rather than solely on technological advancements or occupational developments, we can gain valuable insights into the future of work – not least the types of skills declining or increasing in need that underpin these tasks.

The task-based approach also entails a set of policy implications, predicting a polarised labour market, rising unemployment rates, and decreased innovation in the future. The approach poses policymakers with the challenge of supporting industries with investments in Industrie 4.0 technology while being



aware of the labour consequences it may bring. Striking a balance between the survival and renewal of industries becomes a pressing concern, often at the expense of potential mass unemployment.



Given these options, policymakers find themselves in a perplexing situation, resulting in contradictory policy responses. Many European countries continue to focus on activating labour market policies while training efforts scatter in various directions. Some policymakers adhere to traditional education policies, while others advocate for developing soft skills and 21st-century competencies. Despite past experiences indicating that industrial policies are not always the optimal choice for sustaining an economy, governments are once again considering sector-specific support. Consequently, policymakers grapple with

the impending threat of mass unemployment while witnessing a labour market boiling over. The European labour market currently experiences unprecedented employment levels, yet workers do not fully reap the benefits of this unforeseen growth. Salary trends fail to align with emerging opportunities. Within the discourse on technology and work, the task-oriented approach paints a picture of labour market contradictions and the looming spectre of mass unemployment, which serves as an explanatory factor for the political polarisation witnessed across Europe.

BEYOND4.0's research challenges the task-based approach as the sole lens through which work is understood. Instead, we focus on how companies and employees actively utilise digital technology in the workplace. Our findings reveal various strategies companies employ, leading to varying worker outcomes.

Companies differ in their commitment to fostering learning capabilities, which refer to their capacity to adapt and compete through continuous learning. This encompasses skills development, management practices, and organisational support for individual and collective learning. Notably, organisations that heavily invest in learning capacity emerge as more innovative. However, most companies tend to underutilise this learning potential, opting for economic growth through existing product packaging and extensive marketing efforts, largely ignoring the transformative potential of technology. Consequently, the impact on employees varies significantly.

Higher learning capacity within organisations correlates with improved labour market resilience, reduced unemployment, and diminished occupational downgrading. Employees in sectors characterised by higher learning capacity experience a higher quality of working life and are less exposed to the platformisation of work, limited autonomy, and involuntary part-time employment. When combined with high levels of digital technology adoption, a robust learning capacity accelerates innovation while mitigating negative outcomes associated with technology use. Investing in learning capacity yields a win-win scenario, promoting innovativeness and driving socio-economic progress.

It is important to note that higher learning capacity also creates skill demands, with employees in such sectors recognising the need for further training to effectively fulfil their responsibilities. The development of learning capacity is not dependent solely on the educational attainment of the workforce but is contingent upon organisational and work-related factors. In this environment, having a non-academic diploma does not hinder future prospects. However, despite these positive outcomes, our research reveals that learning capacity levels have stagnated across most sectors over the past decade, necessitating a closer examination of the barriers that impede its development.

Moreover, the rise of platformisation of work extends beyond employees in platform companies such as Uber. Increasingly, digital technology and algorithmic management are shaping work organisation within non-platform companies, a trend we refer to as the 'platformisation of work.' As a result, this phenomenon holds broad policy implications, impacting a significant portion of the European Union workforce.

Beyond Shareholder Interests: The Inclusive Benefits of Learning Capacity

One central argument proposed by BEYOND4.0's research is that company decisions should not solely prioritise shareholder interests. By committing to enhancing learning capacity, companies contribute to socially positive effects, such as reduced unemployment rates, resulting in decreased reliance on social security systems. Rather than seeking refuge in untested approaches like Universal Basic Income, policymakers should focus on providing citizens with the freedom to choose whether or not to participate in the workforce. A participation income model can support those engaging in socially relevant activities, particularly considering the challenges posed by population ageing.

Furthermore, developing learning capacity within organisations helps to prevent polarisation within and between sectors, fostering a stronger innovation drive. Companies with higher learning capacity are likelier to engage in non-technological innovations and combine technological and non-technological innovations, creating a more holistic approach to innovation. These findings challenge the dominant policy response and call for a new perspective.

To facilitate the development of learning capacity within companies, policymakers should aim to create an enabling environment. This can be achieved by encouraging inclusive discussions and decision-making processes involving all company stakeholders, moving away from a sole focus on shareholder interests. Striking a balance of power among shareholders promotes better decision-making and a more equitable work environment. These recommendations are informed by a futuring activity conducted by BEYOND4.0, which incorporated insights from 30 global specialists.



Supporting knowledge spillovers in regional ecosystems

In our penultimate policy brief, we highlight the opportunities offered by entrepreneurial ecosystems. If in a region, the different stakeholders are able to come to cooperate, they can thereby develop a long-term perspective for growth. The example here is what happened in the Finnish region of Oulu, where the cooperation between BusinessOulu, universities and businesses led to a whole new business, but also innovation in existing businesses. The region showed how digital technologies could be used in many new ways. Companies are certainly becoming more efficient, - several large companies have had to close their doors - but the opportunities for growth outstrip the contraction. In regions, the stakes should be how companies and other stakeholders can work together to share more knowledge about technology and innovation opportunities.

With these three levels, we can also offer a new perspective on digital transformation. Technology is needed to make companies more productive. It is up to companies to explore and implement those opportunities. BEYOND4.0 indicates that how that implementation happens is important. Employee participation, but also steering for knowledge spillovers at the regional level, are key to innovation and economic growth. This makes technology an opportunity rather than a threat.

Recommendations

BEYOND4.0 has put forward all kinds of proposals in its various lines of research to make better and more inclusive use of the opportunities presented by digital transformation. In the various policy briefs, we have highlighted them. We summarise the main recommendations that can form an agenda for an inclusive digital transformation in Europe.

Dealing with technology differently.

Targeted Technology Focus: Governments and Development Agencies should prioritise technology investments that align with specific goals of inclusive growth rather than adopting a broad industrial policy approach. Digital transformation is not a threat but rather an opportunity.

Flexible Training Approaches: Governments and labour market agencies should avoid steering training choices solely based on predictions of future tasks and occupations, as current tasks may not accurately reflect future labour market opportunities. Make choices on the basis of the technological challenges, invest in technical training and make sure the workers are engaged in implementing these new technologies. Let them indicate which training is needed to deal with the workplace challenges they encounter.

Support Regional Collaboration: New opportunities arise when different stakeholders cooperate at the regional level. This cooperation should be directed towards entrepreneurial opportunities. New companies and restructuring current businesses should be the focus. The opportunities should arise from knowledge spillovers, between companies, between education and business, and between other regional stakeholders and businesses. Supporting this effort should also be learning at the European level. Regional entrepreneurial ecosystems should exchange best practices.



Support social partnership focused on learning enterprises.

Empowering Employee Self-Development: Governments and social partners, also at the EU level, should promote self-directed employee development and foster an inclusive environment where employees have a say in shaping company policies. Collaboration between social partners remains essential to help divide the productivity surplus that is created.

Improving the Learning Capacity of Companies: The attention to learning capacity is dwindling in European economies. A broad effort is needed to help companies to be more human-centric.

Transforming activating labour market policies into participation income.

Participatory Social Security: Shift the focus of social security systems from mere activation to broader participation, recognising the diversity of citizens' engagement with work. More experimentation is needed with participation income at the European level.

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Recommended reading

Our core results are confirmed by a major publication in the US. Acemoglu has developed 'serious' econometric underpinning on how to understand technological change. In this book, together with Simon Johnson, he summarises the necessary changes to deal with technology. Their recommendations are in line with ours:

Acemoglu, Daron, and Simon Johnson. 2023. Power and Progress : Our Thousand-Year Struggle over Technology and Prosperity. First edit. New York : PublicAffair.

A second book we recommend is on knowledge spillovers. It clarifies the shift in our economies from 'hard technology' towards 'intangibles'. Understanding this shift also redirects our thinking on digital transformation:

Haskel, Jonathan, and Stian Westlake. 2018. Capitalism without Capital. The Rise of the Intangible Economy. Princeton/Woodstock: Princeton University Press/Oxford University Press.

And we recommend the book on participation income written by our Beyond-colleague Heikki Hiilamo. Then you understand why Universal Basic Income is not that helpful, but also what we can learn from it for a more adequate social security system:

Hiilamo, Heikki. 2022. Participation Income: An Alternative to Basic Income for Poverty Reduction in the Digital Age. Cheltenham: Edgar Elgar.

Video: *Participation Income: A solution for the future.* <https://vimeo.com/840403676>

Project Identity

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Consortium	Department of Social Research, University Of Turku, Finland Institute for Employment Research, University of Warwick, UK Institute for the Study of Societies and Knowledge, Bulgarian Academy of Sciences (ISSK-BAS), Bulgaria Le CNAM-CEET, France Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO, Netherlands Technische Universitat Dortmund, Sozialforschungsstelle Dortmund (sfs) (TUDO), Germany UCL Institute for Innovation and Public Purpose (IIPP), London, UK University of Helsinki, Finland University of the Basque Country - Sinnergiak Social Innovation, Basque Country - Spain
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