European Commission

Towards an EU research and innovation agenda for the future of work

Collaborating for fair, decent and rewarding jobs in Europe

POLICY BRIEF

Research and Innovation

Towards an EU research and innovation agenda for the future of work

European Commission
Directorate-General for Research and Innovation
Directorate E — Prosperity
Unit E.5 — Economic & Social Transitions

Contact Orestis Kalliantzidis
Email orestis.kalliantzidis@ec.europa.eu
RTD-PUBLICATIONS@ec.europa.eu
European Commission
B-1049 Brussels

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EUROPEAN COMMISSION

Towards an EU research and innovation agenda for the future of work

Collaborating for fair, decent and rewarding jobs in Europe

2023

Directorate-General for Research and Innovation
European Research Area

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ERA4FUTUREWORK: RESEARCH AND INNOVATION IN THE PURSUIT OF FAIR, DECENT AND REWARDING JOBS

The future of work denotes change: change in what work will consist of, who will carry it out, how it will be performed and where it will be taking place. Citizens, workers and employers may find it challenging to understand the forces causing ongoing changes in labour markets and workplaces today, and anticipate their impact on their careers, incomes, working conditions or health.

This policy brief sheds light on some of these forces of change in our workplaces, namely the digital and green (twin) transitions, different forms of inequality and emerging crises. It explores how targeted ***research and innovation*** *(R & I) in the EU could contribute to bringing clarity to the debate, particularly if performed and analysed by adopting a portfolio approach.*

An extensive screening of EU-funded R & I projects has highlighted 212 Horizon 2020 projects and 38 Horizon Europe projects of relevance to the future of work, receiving a total EU contribution close to EUR 435 million. However, a more systematic stakeholder dialogue is needed for R & I and policy to keep up with the current pace of technological, political and societal change. Consequently, the new European research area proposes a path for future ***collaboration between policymakers, researchers and stakeholders*** *through a new action (****ERA4FutureWork****), which aims to direct the focus of R & I on these changes towards more favourable outcomes for citizens.*

1. Drivers of change in Europe's workplaces

1.1. The digital transition

Innovative technologies (such as artificial intelligence (AI)) are reshaping millions of jobs in the EU. Some jobs are being lost to these changes, entirely new ones are created and many are transformed, benefitting from complementarities between human workers and new technologies. Automation is one factor causing employment structures to shift, often leading to higher inequalities (polarisation) in knowledge, employment and wages[1].

Business models are being disrupted and transformed by digital innovation, which alters the ways in which work is organised and performed. As a result, the skills that workers need are also changing at an unprecedented speed. New forms of employment such as those

[1] Acemoglu, D. and Loebbing, J., 'Automation and polarization', National Bureau of Economic Research, No 30528, 2022.

created by the platform/gig economy are on the rise. In some cases, they create opportunities for personal growth, flexibility, social integration or higher incomes. In other cases, they increase the risks of stressful working conditions, discrimination, lack of social protection and a difficult work–life balance.

This multitude of possible outcomes can cause individual workers to fear that increased digitalisation at work might gradually deprive them of the skills necessary to have a job, alienate them from their co-workers or silence them when decisions are taken at work. New digital capacities for algorithmic surveillance and decision-making can cripple workers' ability for collective bargaining in some sectors, leave them struggling to enforce their rights or render them unable to detect discrimination against them.

On the other hand, employers need to benefit from the efficiencies and quality enhancement that digital innovation brings to industry, the service economy and the public sector. Innovation in advanced manufacturing and other key enabling technologies can contribute to a more sustainable and cost-efficient production, boost industry's resilience towards external shocks and increase the competitiveness of Europe's economy[2].

1.2. The green transition

The green transition is a driver of positive change for our societies and workplaces, in particular through the creation of products and services promoting sustainability, through the greening of production processes, and through upskilling/reskilling and providing career opportunities for the workers involved.

However, greening our energy supply or industrial production also leads to labour reallocations, with consequences for workers and their communities. Certain EU regions may be affected by the phasing out of coal and the impact, in terms of job losses, is quite severe. Furthermore, these regions do not seem to benefit from the jobs created by green investments (solar, wind), which seem to be concentrated elsewhere[3].

It is anticipated that non-polluting, sustainable (green) jobs will counter, to some extent, job losses induced by digitalisation and the phasing out of coal in the EU. However, workers that are asked to transition to new jobs (within the same sector or from 'brown' to 'green' sectors) need to have acquired new skills to perform successfully in greener jobs[4].

[2] European Factories of the Future Research Association, Made in Europe – The manufacturing partnership in Horizon Europe – Strategic research and innovation agenda (SRIA), European Commission, Brussels, 2021, pp. 3–6.

[3] Asikainen, T. et al., The Future of Jobs is Green, Joint Research Centre, Publications Office of the European Union, Luxembourg, 2021, p. 4.

[4] Staff working document accompanying the proposal for a Council recommendation on ensuring a fair transition towards climate neutrality, SWD(2021) 452 final, p. 8 and pp. 12–13.

The EU is currently lacking in available homogeneous data to trace and track these transformations, anticipate future job structures and define the skills needed for its workforce[5].

1.3. Evolving inequalities

The risks of digitalisation or the green transition favouring some EU regions over others come on top of more traditional drivers of inequality, such as urbanisation and the clustering of economic activities at the core of the EU or within Member States. The geographical impact of the COVID-19 crisis was uneven, threatening to widen these regional inequalities[6].

Despite the consistent improvement in female participation in EU labour markets (according to data[7] presented in the 2021 edition of the Transitions Performance Index), lockdowns and the consequent proliferation of teleworking seem to have negatively affected vulnerable groups such as essential workers, working mothers, informal carers or migrants, especially those in precarious jobs, who lack access or the skills to use digital technologies.

Finally, demographic developments, such as the increase in (healthy) life expectancy within the EU, brain drain or the arrival of migrants in society, have the potential of widening the skills gap, increasing income inequalities or putting pressure on social security systems. Such challenges require the right mix of economic, social and education policies to ensure integration and maximum employment under fair conditions (fair jobs).

1.4. Multiple crises

Recent political emergencies have underscored more than ever the need to achieve both resilience and sustainability in key industries and value chains if we are to maintain our prosperity in the future. Persistent worker or skills shortages in high technology (ICT, green) or critical (healthcare, construction) sectors are a cause for concern in this respect. New, fair and evidence-based labour policy approaches are needed more than ever if we want affected or future workers to transition towards better, fairer and more sustainable jobs, without incurring unbearable personal and financial costs.

[5] Vona, F., Labour Markets and the Green Transition: A practitioner's guide to the task-based approach, Biagi, F. and Bitat, A. (eds), Publications Office of the European Union, Luxembourg, 2021, pp. 23–34.

[6] Grzegorzewska, M. et al., Cohesion in Europe towards 2050 – Eighth report on economic, social and territorial cohesion, Directorate-General for Regional and Urban Policy, Publications Office of the European Union, Luxembourg, 2022, pp. 1–18.

[7] Gender gap in the employment-to-population ratio (Section V.4 of the Transitions Performance Index).

2. R & I helps to better understand and respond to drivers of change in the future of work

When designing new social policies, policymakers need to be aware of technological context and developments, identify and mitigate emerging threats and base their interventions on future-proof principles. R & I can provide a sound analytical underpinning to help achieve these objectives based on new data, its interpretations by scientists and the rigorous testing of different theories.

Anticipating the possible scenarios for the future of work requires a considerable amount of research by different disciplines (humanities, social and natural sciences), thematic fields (innovation, data protection, employment legislation, social security, education and training, health and well-being, etc.) and stakeholders (workers, employers, researchers, policymakers).

While R & I projects may achieve a high degree of interdisciplinarity in a quest to answer a specific question, only a **portfolio approach** can offer decision-makers a clear view of where resources are devoted, compared to where institutional and societal needs are. The benefits of a portfolio approach to research planning are well documented[8], particularly for individuals and organisations having to strike a balance between societal importance and limitations with respect to available funding[9].

2.1. A portfolio of EU-funded R & I projects for future work

Taking this need into account, the European Commission Directorate-General (DG) for Research and Innovation opted to build a knowledge base, by treating all EU-funded research projects (Horizon 2020 and Horizon Europe) of particular relevance to the future of work as 'project portfolios'. Such an approach has significant benefits in terms of efficiency, analysis of project results, feedback to different policies and future research planning.

Building such a new approach entailed making choices as per what the future of work means in a EU context and considering the needs of both research and employment policy communities when selecting relevant projects. A portfolio is also about classifying research outputs. While R & I projects often cover more than one research theme or produce various outputs, an effective classification was needed to ensure that projects are clustered in a coherent plan, so that their interdependencies can be studied.

As a first step in this process, DG Research and Innovation selected 212 **Horizon 2020** projects (out of a pool of approximately 30 000), through the application of text mining and

[8] Vonortas, N. S. and Ràfols, I., 'The use of research portfolios in science policy', fteval Journal for Research and Technology Policy Evaluation, Vol. 47, 2019, pp. 106–117.

[9] Klavans, R. and Boyack, K. W., 'Research portfolio analysis and topic prominence', Journal of Informetrics, Vol. 11, No 4, 2017, pp. 1158–1174.

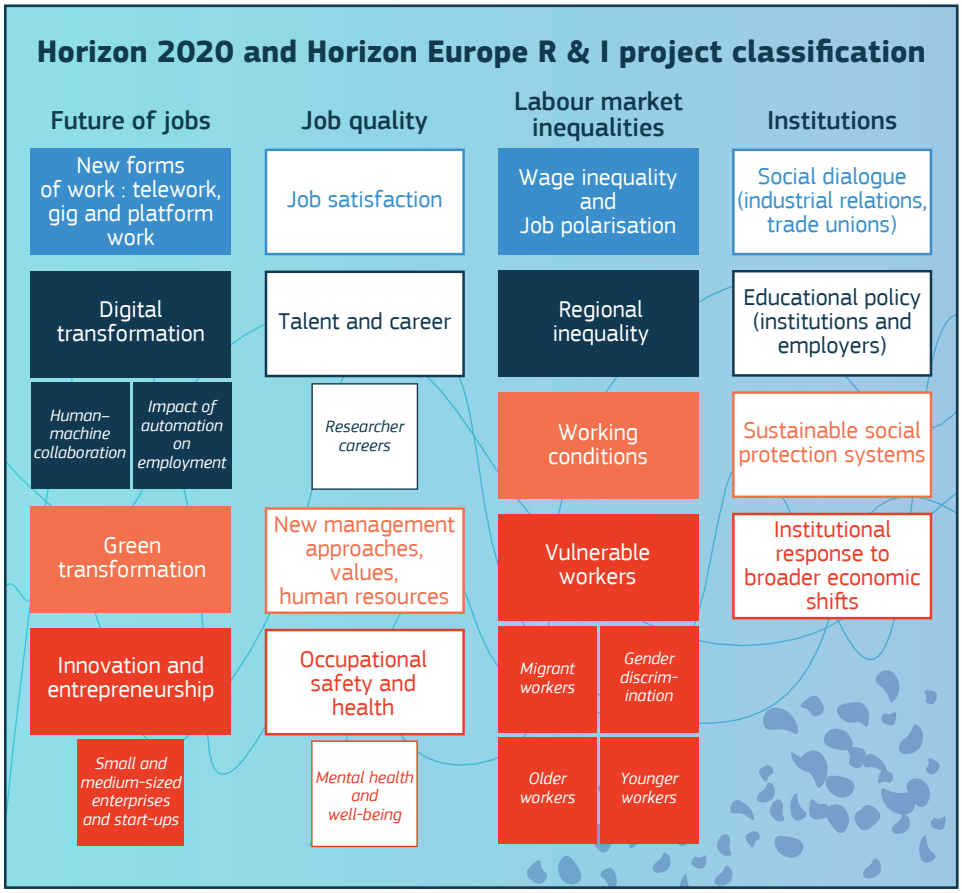
a subsequent manual filtering out of irrelevant results, according to preset criteria. Keywords used for the initial selection of projects were based on the objectives of the European Pillar of Social Rights action plan, in order to embed the EU labour policy context into the process. The total EU contribution granted to these 212 projects contributing to R & I on the future of work will reach almost EUR 250 million over a 7-year period.

A manual selection of projects from clusters 1 (health), 2 (culture, creativity and inclusive society) and 4 (digital, industry and space) of **Horizon Europe** yielded 38 additional projects, which started work during the first 2 years of the programme (2021–2022) and will be monitored for future results. The maximum EU contribution granted to these Horizon Europe projects with high relevance to the future of work amounts to approximately EUR 185 million.

The identification numbers, acronyms and titles of the selected projects can be found in the **Annex** to this policy brief. They cover a wide range of relevant policy areas, showing that there is demand from various stakeholders across the EU and Horizon Europe-associated countries to better understand how work is evolving and how this affects the economy, the environment and society.

Furthermore, there is considerable diversity within the portfolio when looking at the type of planned deliverables or the target groups benefitting from the R & I performed. Around a third of the selected projects contribute to strengthening scientific dialogue, especially in the social sciences and humanities field through research activities and the publication of studies. Many of the projects aim to create and pilot technological solutions in real-life workplaces or develop training modules and new curricula for workers, managers and their trainers. Some EU-funded initiatives are fostering the diffusion of innovation by creating cross-border networks or best practice repositories. Finally, a smaller portion of the selected projects aim to develop recommendations for policy and decision-makers on how to address emerging issues affecting the future of work.

To systematise its analysis, DG Research and Innovation classified these selected projects into **four broad categories**: future of jobs, job quality, inequalities in the labour market and institutional support to workers. These, in turn, were further broken down into categories of interventions, better representing the current drivers of change, challenges or concerns around the future of work (see chart below).



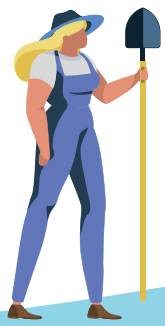
Based on:

**"What is the future of work? A science mapping analysis"; Monica Santana, Manuel J. Cobo; European Management Journal 38 (2020) 846-862*

**Review of 23 high level policy documents by international organisations, government, academia, think tanks, trade unions & the private sector.*

This classification does not aim to serve as a scientific reference for understanding policies or research around the future of work. Its strengths lie upon its comprehensive coverage of the most relevant scientific disciplines, together with its integration of EU R & I, employment and social policy priorities. The integration of these priorities was based on a science-mapping analysis[10] of how research themes around the future of work have evolved over the past few

[10] Santana, M. and Cobo, M. J., 'What is the future of work? A science mapping analysis', European Management Journal, Vol. 38, No 6, 2020, pp. 846–862.



decades and a desk review of 23 recent, high-level policy documents on the future of work, issued by governmental organisations, social partners, academia and think tanks.

Its main limitations are a lack of coverage of other EU funding programmes or national initiatives tackling the same issues, and a lack of incorporation of quantitative data measuring the importance of research questions for the scientific community (such as number of citations of research results or funds allocated per question).

One of the observations made during the performance of this exercise was that in order to build a comprehensive classification framework, it is important to take into account both the academic interests of researchers and the research needs of policymakers.

3. Research needs about the future of work are constantly evolving

The added value of curating a research portfolio of EU projects is not limited to informing decision-makers of research outcomes, or to implementing project results at the workplace. Exchanges with researchers, stakeholders and academia must also help us spot, analyse and understand change.

This helps decision-makers invest in research that focuses on improving workers' lives, spotting emerging and transformative trends and addressing policy goals that have not yet been attained. Without this parallel feedback loop, future R & I efforts may run out of steam or, worse, divert resources into issues that are not relevant to society.

Based on the first screening of the portfolio and intelligence gathered by experts in a number of events (such as the 2021 European Research and Innovation Days), the following themes for R & I action at the EU level for the future of work are coming through.

- **Digital transition.** How human-centric technologies can ensure that innovation serves workers' needs and values and does not dictate the way they work; how to involve workers in the design and application of new technologies in workplaces at early stages; how to take into account and promote well-being and (mental) health at the workplace by exploring in depth the effects of new technologies (AI, extended reality, virtual reality, the metaverse and remote working) on workers[11].

- **Green transition.** Ways to combine economic with environmental and social sustainability; innovating to reduce industry's environmental footprint and rising

[11] Expert Panel on Effective Ways of Investing in Health, Supporting mental health of health workforce and other essential workers – Opinion of the Expert Panel on Effective Ways of Investing in Health, Directorate-General for Health and Food Safety, Publications Office of the European Union, Luxembourg, 2021.

inequalities among workers (in knowledge, value or income); green solutions strengthening industry's resilience and autonomy in the event of adverse external effects.

- **Deepening our knowledge of the twin transitions.** What synergies between digital, green and education policies can we support to make sure workers (including under-represented groups like women) have the necessary skills to retain their jobs, or move to new, greener ones?

- **Anticipating drivers of future inequalities.** To avoid the formation of new vulnerable groups of workers and to tackle the problems that existing vulnerable groups are facing.

- **Embracing multidisciplinarity** (science, technology, engineering and mathematics, social sciences, ethics) and promoting incentives to increase the **participation of women in technical education** when designing future R & I priorities for employment. A multi-stakeholder approach helps achieve societal readiness and acceptance of future innovation.

- **Prioritising and joining forces.** Consider the impressive work done by stakeholders at the national and regional levels, tap into new employment-related data generated by EU research and prioritise focusing on the most important research questions affecting employers and future workers.

Achieving progress in these areas requires **a more strategic approach** in anticipating the future of work, both by R & I and by employment policymakers. The policy cycle and short-term legislative needs are hardly predictable or aligned with the pace and planning of research activities. Project feedback to policymakers about emerging changes at the workplace and future research needs is sometimes not systematic, or it is too focused on project follow-up activities. At the same time, decision-makers of all types (legislators, social partners, academia and funders) would benefit from: (a) informing each other of their activities and needs; (b) prioritising research questions with the highest potential benefit for workers and employers; and (c) reflecting on the research priorities that can be better addressed through cross-border collaboration.

4. ERA4FutureWork: EU R & I priorities for the future of work

Facing these needs for coordination and consultation, DG Employment, Social Affairs and Inclusion and DG Research and Innovation teamed up in order to promote a more systematic dialogue between R & I and employment policymakers, including social partners. This collaboration led to the adoption of '**ERA4FutureWork**' (action 11.3 under

the new European research area), which will identify and recommend best practices, gaps and future priorities for R & I investment on the future of work.

ERA4FutureWork will deliver a European **strategic R & I agenda for the future of work**, with the involvement of interested Member States and relevant stakeholders. This agenda will be concise and specific enough to be consulted or used as a future basis for collaboration by interested R & I EU policymakers at the local, national and EU levels.

Interested readers can stay informed and find out more about EU-funded R & I activities on the future of work by accessing the Commission's dedicated webpage, the CORDIS results pack on selected Horizon 2020 projects and our portfolio of Horizon 2020 projects on platform work and researchers' testimonies regarding how R & I is contributing to decent and meaningful jobs for our citizens.

Annex: Portfolio of selected Horizon 2020 and Horizon Europe projects on the future of work

Horizon 2020 projects

Project Acronym	Project title
SMACT	Skilled migrant adjustment to career transitions
DevelopMed	Developing the next generation of research leaders in precision oncology
EINST4INE	European training network for industry digital transformation across innovation ecosystems
FELICE	Flexible assembly manufacturing with human–robot collaboration and digital twin models
STREAM	Smart tools for railway work safety and performance improvement
DIOSI	Developing and implementing hands-on training on open science and open innovation for early career researchers
ISPAS	Paths to successful innovations
UNTANGLED	Untangling the impacts of technological transformations, globalisation and demographic change to foster shared prosperity in Europe
KIDS4ALLL	Key inclusive development strategies for lifelong learning
DISCOVERY LEARNING	Effective training of transferable skills related to open science and innovation for PhD candidates and early-stage researchers
FARMWELL	Improving farmers' wellbeing through social innovation
xCTing	Enabling X-ray CT based industry 4.0 process chains by training next generation research experts
CODE	Collectivism in the digital era: Novel approaches to worker mobilization and interest representation
Boss Ex Machina	Boss Ex Machina: Mapping and understanding the technological transformation of managerial prerogatives in workplaces driven by machines, artificial intelligence and algorithms
COPERNICUS	Social finance for social enterprises: Theory and practice to build a more inclusive society
STAR	Safe and trusted human centric artificial intelligence in future manufacturing lines
TEAMING.AI	Human-AI teaming platform for maintaining and evolving AI systems in manufacturing

INCISIVE	Occupation insecurity: Conceptualization, scale development, and international application and validation
COALA	Cognitive assisted agile manufacturing for a labor force supported by trustworthy artificial intelligence
YOUNG FARMERS	What can digital communications do for generational renewal in farming?
VOJEXT	Value of joint experimentation in digital technologies for manufacturing and construction
AI REGIO	Regions and DIHs alliance for AI-driven digital transformation of European manufacturing SMEs
GENCARGAP	Gender career gap and firm composition
I4MS4Ts	I4MS tools and technologies for transformation
WIRED	Women in research and higher education
SOJUFOW	Social justice and the future of work
SMART 4.0	Smart manufacturing advanced research training for industry 4.0
UNA4CAREER	UNA Europa, an alliance of universities for the emergence of talent and the development of research careers
CAPRI	Cognitive automation platform for European process industry digital transformation
MIDIC	Migrant descendants' intercultural competence and their recognition in the English and Italian labour market
DLH	Disability benefits, labour force participation, and health: Evaluating the effect of social protection policies
COLLECTITUDE	Building the collective at times of precarity: Precarious labour and its counter movements
SOPHIA	Socio-physical interaction skills for cooperative human–robot systems in agile production
EMPOWER	European platform to promote wellbeing and health in the workplace
Magnet4Europe	Magnet4Europe: Improving mental health and wellbeing in the health care workplace
MENTUPP	Mental health promotion and intervention in occupational settings: MENTUPP
DocEnhance	Enhancing skills intelligence and integration into existing PhD programmes by providing transferable skills training through an open online platform
XEUROPE	X-Europe
MindBot	Mental health promotion of cobot workers in industry 4.0

MOBILISE	Mobilizing for basic incomes. Social innovation in motion
H-WORK	Multilevel interventions to promote mental health in SMEs and public workplaces
HECAT	Disruptive technologies supporting labour market decision making
WorkYP	Working, yet poor
GEWADI	Role of educational systems on entry level wage differences
HyperCOG	Hyperconnected architecture for high cognitive production plants
R2P2	Networking for research and development of human interactive and sensitive robotics taking advantage of additive manufacturing
DIGIMAN4.0	Digital manufacturing technologies for zero-defect industry 4.0 production
DiManD	Digital manufacturing and design training network
SHAREWORK	Safe and effective human–robot cooperation towards a better competitiveness on current automation lack manufacturing processes
CARe	Career advancement for refugee researchers in Europe
RIMA	Robotics for infrastructure inspection and maintenance
SmartWork	Smart age-friendly living and working environment
AgeingatWork	Smart, personalized and adaptive ICT solutions for active, healthy and productive ageing with enhanced workability
REBUILD	REBUILD – ICT-enabled integration facilitator and life rebuilding guidance
BEYOND4.0	Inclusive futures for Europe beyond the impacts of industry 4.0 and digital disruption
TECHNEQUALITY	Technological inequality – Understanding the relation between recent technological innovations and social inequalities
PLUS	Platform labour in urban spaces: Fairness, welfare, development
FINDER	Fostering innovation networks in a digital era
FIT4FoF	Making our workforce fit for the factory of the future
EmpowerMarginalized	Empowerment of marginalized convicted women through social enterprises
ORBETEC	Organisational behaviour with new technologies: A human resources management model for industry 4.0
BRIDGE	Labour market integration: Consequences of cross-border commuting
MAJORdom	Intersections of class and ethnicity in paid domestic and care work: Theoretical development and policy recommendations based on the study of 'majority workers' in Italy and in the USA

ArcticLabourTime	Investing in the Arctic: The affective and temporal contradictions of work, mobility and inequality in northern peripheries
FEMAGREE	Female agricultural entrepreneurs: Identifying institutional barriers to equality
CoLLaboratE	Co-production cell performing human–robot collaborative assembly
KEEN	Creation of the 'knowledge-empowered entrepreneurship network' to position Kaunas University of Technology at the forefront of EU research in entrepreneurship
IN4ACT	Industry 4.0 impact on management practices and economics
TRAINEE	Toward market-based skills for sustainable energy efficient construction
NEWBREED	Training a new breed of interdisciplinary researchers to respond to the opportunities and challenges of ageing
FUSION	The effects of financial capital accumulation on employment and wealth distribution
GREET	Guiding refugees via European exchange and training
RE-mapping	Tackling early school leaving and low school performance through working with students' representational spaces. The case of 15-year-old students in France, Italy and Greece.
HumRobManip	Robotic manipulation planning for human–robot collaboration on forceful manufacturing tasks
ME-WE	Psychosocial support for promoting mental health and well-being among adolescent young carers in Europe
EPICA	EPICA – Strategic partnership for the co-design of an innovative and scalable e-portfolio ecosystem to improve the quality and visibility of skills
Families_Share	Socializing and sharing time for work–life balance through digital and social innovation
DOIT	Entrepreneurial skills for young social innovators in an open digital world. A European initiative
NEMESIS	Novel educational model enabling social innovation skills development
SIRIUS	Skills and integration of migrants, refugees and asylum applicants in European labour markets
LABOREP	Labor market segmentation and political participation
CoMRAde	A collaborative mobile robot arm that can learn impedance critical tasks from humans
LEEP	Longitudinal employer–employee perspectives on the role of human capital investments for retirement transitions

SHADOWS	SHADOWS: Tackling undeclared work in the European Union
MIDIH	Manufacturing industry digital innovation hubs
SME 4.0	Industry 4.0 for SMEs – Smart manufacturing and logistics for SMEs in an X-to-order and mass customization environment
I4MS-Go	I4MS going to market alliance
RICAIP	Research and innovation centre on advanced industrial production
INVITE	Co-designing and piloting demand-driven mechanisms, skill sets and measures for stimulating and facilitating open innovation across European innovation systems
ARIESS	Augmented reality and indoor navigation for enhanced assembly
InGRID-2	Integrating research infrastructure for European expertise on inclusive growth from data to policy
COHSMO (former Hans Thor Andersen)	Inequality, urbanization and territorial cohesion: Developing the European social model of economic growth and democratic capacity (COSHMO)
BG_CareerDays	Bulgarian Days of Career Development and Mobility of Researchers
MAStErS	Making sense of education and skills in a world of super-mobility
PEARLE	Peers in ECEC centres: Who are they and do they matter? An empirical analysis on ECEC group composition, its drivers and its effects
EURECA	Enhanced human robot cooperation in cabin assembly tasks
SIMFAL	Assembly planning and simulation of an aircraft final assembly line
PEACH	Parental employment and child investments
SIPEA	Social investment perspective in work–family reconciliation measures in Europe and East Asia
ISOTIS	Inclusive education and social support to tackle inequalities in society
MONROE	Modelling and evaluating the socio-economic impacts of research and innovation with the suite of macro- and regional-economic models
SKILLFUL	Skills and competences development of future transportation professionals at all levels
SK PRES SSH	Social sciences and humanities: A new agenda for Europe's challenges
RecessionsHealth	Recessions, labour-market uncertainty and health
Factory2Fit	Empowering and participatory adaptation of factory automation to fit for workers
HUMAN	Human manufacturing

A4BLUE	Adaptive automation in assembly for blue collar workers satisfaction in evolvable context
PIE News	Poverty, income, and employment news
INCLUSIVE	Smart and adaptive interfaces for inclusive work environment
MANUWORK	Balancing human and automation levels for the manufacturing workplaces of the future
SAGE	Systemic action for gender equality
INSPIRE	Interdisciplinarity and excellence for doctoral training of international researchers in Paris
DIRS	Deusto International Research School
EURAXIND	EURAXESS for industry
MIGRANTCHRISTIANITY	Migration, religion and work in comparative perspective. Evangelical 'ethnic churches' in southern Europe
ECECWorkforce	Knowledge, skills and attitudinal competences for quality early childhood education and care
NoWork	The long-term effects of unemployment on older workers: Studying life-course influences in social context
ALMP	The effect of active labour market policies on the behaviour and employability of benefit claimants
EUP	The implementation of the EU employment policies in Germany, Italy and Denmark
TELE	Does it promote economy and well-being? The impact of teleworking on environment and labour market outcomes
YOUNG_ADULLLT	Policies supporting young people in their life course. A comparative perspective of lifelong learning and inclusion in education and work in Europe
ENLIVEN	Encouraging lifelong learning for an inclusive and vibrant Europe
Science2Society	Improving university, industry and society interfaces to boost the throughput capacity of Europe's innovation stakeholders
MOVING	Training towards a society of data-savvy information professionals to enable open leadership innovation
WEKIT	Wearable experience for knowledge intensive training
ColRobot	Collaborative robotics for assembly and kitting in smart manufacturing
SOCRATIC	Social creative intelligence platform for achieving global sustainability goals
FAWORIT 2014-2015	Looking over the horizon – Horizontal priorities in research and in everyday challenges of the researchers' career!

CAREER	From school to career: Towards a career perspective on the labor market returns to education
LIBRA	Leading innovative measures to reach gender balance in research activities
MW_INEQ	Minimum wages, (mis)allocation of labour, and inequality
iManage	Rethinking employment law for a world of algorithmic management
DYNANSE	Righting the wrongs. A life course dynamics approach for non-standard employment
OrgMIGRANT	How work organizations shape ethnic stratification across immigrant generations: Assimilation, segregation, and workplace contexts
CTSM	Competition, time pressure, public speaking and multitasking: The role of willingness and ability to cope with pressure in explaining individual differences and inequality in career outcomes
Ergo-Lean	Rethinking human ergonomics in lean manufacturing and service industry: Towards adaptive robots with anticipatory behaviors
REsPecTMe	Resolving precariousness: Advancing the theory and measurement of precariousness across the paid/unpaid work continuum
LPIGMANN	Labour policies for inclusive growth
MCLPS	The migration challenge: Labour markets, policy reforms, and social cohesion
FirmIneq	Wage inequality within and across firms: The role of market forces, government and firm policies
TechChange	Technological change: New sources, consequences, and impact mitigation
MaMiLabor	Macro- and microeconomic analyses of heterogeneous labor market outcomes
AUTOMATION	Automation and income distribution: A quantitative assessment
DYMOLAMO	Dynamic modelling of labor market mobility and human capital accumulation
PROF-TRAC	Professional multi-disciplinary training and continuing development in skills for NZEB principles
ISIGrowth	Innovation-fuelled, sustainable, inclusive growth
QuInnE	Quality of jobs and innovation generated employment outcomes
RE-InVEST	Rebuilding an inclusive, value-based Europe of solidarity and trust through social investments
NEGOTIATE	Negotiating early job-insecurity and labour market exclusion in Europe

MOVE	Mapping mobility – Pathways, institutions and structural effects of youth mobility in Europe
YMOBILITY	Youth mobility: Maximising opportunities for individuals, labour markets and regions in Europe
SARAFun	Smart assembly robot with advanced functionalities
ESEARCH	Direct empirical evidence on labor market search theories
CAPABLE	Enhancing capabilities? Rethinking work–life policies and their impact from a new perspective
PLABOR	Platform labor: Digital transformations of work and livelihood in post-welfare societies
HumanTrafficking	Human trafficking: A labor perspective
WorkOD	Work on demand: Contracting for work in a changing economy
I-LINC	Platform for ICT learning and inclusion for youth employability and entrepreneurship
IneqPol	Inequality – Public policy and political economy
INTAC	The international register of academic job categories. Facilitating careers in the European research area
FamilyTies	Family ties that bind: A new view of internal migration, immobility and labour-market outcomes
SHARE	Seizing the hybrid areas of work by re-presenting self-employment
CIC	Context, identity and choice: Understanding the constraints on women's career decisions
CBTC	The resurgence in wage inequality and technological change: A new approach
DomEQUAL	A global approach to paid domestic work and social inequalities
NEWFAMSTRAT	The new shape of family-related gender stratification
DEPP	Designing effective public policies
DYNAMICSS	Labour market dynamics and optimal policies
FACTS4WORKERS	Worker-centric workplaces in smart factories
SYMBIO-TIC	Symbiotic human–robot collaborative assembly: Technologies, innovations and competitiveness
SatisFactory	A collaborative and augmented-enabled ecosystem for increasing satisfaction and working experience in smart factory environments
SYMPLEXITY	Symbiotic human–robot solutions for complex surface finishing operations
iLABOUR	Online labour: The construction of labour markets, institutions and movements on the internet

ENGRes2014	EU2014 Conference on the Empowerment of the Next Generation of Researchers – 'Promoting talents, spreading excellence'
EUCYS 2014	European Union Contest for Young Scientists 2014
FEAST	Fair, effective, and sustainable talent management using conditional network embedding
SciChallenge	Next generation science challenges using digital and social media to make science education and careers attractive for young people
eCraft2Learn	Digital fabrication and maker movement in education: Making computer-supported artefacts from scratch
VILT-DEV	Virtual instructor-led IT developer training program
MyKeople	Innovative SaaS platform for assessment, training and support to companies – Innovative SaaS platform for assessment, training and support to companies and employees embracing the digital transformation
PERSEUS	Doctoral programme for integrated research activities to unlock a potential of top-level researchers in digital transformation for sustainability
WORKERO	Workero – Connecting space and knowledge
OPEN DEI	Aligning reference architectures, open platforms and large scale pilots in digitising European industry
DigiFed	Digital innovation hubs (DIH) federation for large scale adoption of digital technologies by European SMEs
SHOP4CF	Smart human oriented platform for connected factories
ahead	Ahead, the intelligent digital workspace as a service
DCODE	Fundamentals of design competence for our digital future
RESISTIRE	Responding to outbreaks through co-creative sustainable inclusive equality strategies
MICROPROD	Raising EU productivity: Lessons from improved micro data
FAIRWORK	FAIRWORK: Building a fairwork foundation
COGONU	Contesting governance by numbers: The mobilizations of food delivery couriers across Europe in time of the pandemic
GIGSTATS	Real-time economic statistics tool for measuring the online gig economy
WorkPilots expansion	Preventing EU youth unemployment – One gig at a time
InnoCyPES	Innovative tools for cyber-physical energy systems
CIVIS3i	The CIVIS alliance programme for international, interdisciplinary, intersectoral research and training for experienced researchers
EUniWell Research	European University for Well-Being – Research

K-TRIO 5	Researchers in the knowledge triangle
Signs for Europe	Business innovation through qualifying and (re-)employing of deaf people
Our Space Our Future	Our space our future: Making careers in the space industry an inspiring reality for all
WORK.INC	The right to work for men and women with disabilities – Successful collaboration between employers and support systems using the workplace as an arena for work inclusion
MAKERS	Smart manufacturing for EU growth and prosperity
IRIMA II	Industrial research and innovation monitoring and analysis (stage II)
EPHOR	Exposome project for health and occupational research
iHand	The first soft robotic glove for hand injury prevention and rehabilitation
FourByThree	Highly customizable robotic solutions for effective and safe human robot collaboration in manufacturing applications
PHABLABS 4.0	Photonics enhanced fab LABS supporting the next revolution in digitalization
ROSSINI	Robot enhanced sensing, intelligence and actuation to improve job quality in manufacturing
Signs for Europe	A new social business model for Europe to promote the integration of deaf people in the professional market
PILLARS	Pathways to inclusive labour markets
WorkingAge	Smart working environments for all ages
SHERLOCK	Seamless and safe human – Centred robotic applications for novel collaborative workplaces
CO-ADAPT	CO-ADAPT: Adaptive environments and conversational agent based approaches for healthy ageing and work ability

Horizon Europe projects

Project Acronym	Project title
INCA	Increase corporate political responsibility and accountability
rEUsilience	Risks, resources and inequalities: Increasing resilience in European families
TransEuroWorkS	Transforming European work and social protection: A new proactive welfare state fit for the future world of work
WeLaR	Welfare systems and labour market policies for economic and social resilience in Europe
ESSPIN	Economic, social and spatial inequalities in Europe in the era of global mega-trends
MapIneq	Mapping inequalities through the life course
EXIT	Exploring sustainable strategies to counteract territorial inequalities from an intersectional approach
CLEAR	Constructing learning outcomes in Europe: A multi-level analysis of (under)achievement in the life course
SCIREARLY	Policies and practices based on scientific research for reducing underachievement and early school leaving in Europe
ReSChape	Reshaping supply chains for positive social impact
RETHINK-GSC	Rethinking global supply chains: Measurement, impact and policy
TWIN SEEDS	Towards a world integrated and socio-economically balanced European economic development scenario
AI-PRISM	AI powered human-centred robot interactions for smart manufacturing
CONVERGING	Social industrial collaborative environments integrating AI, big data and robotics for smart manufacturing
Fluently	Fluently – The essence of human–robot interaction
Waste2BioComp	Converting organic waste into sustainable bio-based components
5G-TIMBER	Secure 5G-enabled twin transition for Europe's timber industry sector
RE4DY	European data as a product value ecosystems for resilient factory 4.0 product and production continuity and sustainability
Zero-SWARM	Zero-enabling smart networked control framework for agile cyber physical production systems of systems
BEEYONDERS	Breakthrough European technologies yielding construction sovereignty, diversity and efficiency of resources

HumanTech	Human centered technologies for a safer and greener European construction industry
RobetArme	Human–robot collaborative construction system for shotcrete digitization and automation through advanced perception, cognition, mobility and additive manufacturing skills
ELECTRO	Electrified conversion of plastic waste into olefins and downstream integration
AEQUITAS	Assessment and engineering of equitable, unbiased, impartial and trustworthy AI systems
BIAS	Mitigating diversity biases of AI in the labor market
FINDHR	Fairness and intersectional non-discrimination in human recommendation
Up-Skill	Up-skilling for industry 5.0 roll-out
EARASHI	Embodied AI/robotics applications for a safe, human-oriented industry
FAIRWork	Flexibilization of complex ecosystems using democratic AI based decision support and recommendation systems at work
FEROX	Fostering and enabling AI, data and robotics technologies for supporting human workers in harvesting wild food
HACID	Hybrid human artificial collective intelligence in open-ended decision making
SIMAR	Safe inspection and maintenance supporting workers with modular robots, artificial intelligence, and augmented reality
SoftEnable	Towards soft fixture-based manipulation primitives enabling safe robotic manipulation in hazardous healthcare and food handling applications
AGIMUS	Next generation of AI-powered robotics for agile production
CoreSense	Coresense: A hybrid cognitive architecture for deep understanding
MOZART	Morphing computerized mats with embodied sensing and artificial intelligence
PILLAR-Robots	Purposeful intrinsically motivated lifelong learning autonomous robots
Sestosenso	Physical cognition for intelligent control and safe human–robot interaction

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The future of work is about change: change in what work will consist of, who will carry it out, how it will be performed and where it will be taking place. It is also about everyone: citizens, whether workers or employers, find it ever more difficult to understand the complex forces affecting their careers and working conditions. This policy brief sheds light on some of the current challenges causing change in our workplaces, explores how research and innovation brings clarity to the debate and proposes a new forum. ERA4FutureWork is a new action bringing together policymakers, researchers and stakeholders in order to understand and shape research in the future of work.

Research and Innovation policy

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