



European
Commission

CORDIS Results Pack on the future of work

A thematic collection of innovative EU-funded research results

June 2021

A top-down view of a busy office desk. The desk is made of dark wood and is cluttered with various items: a white computer mouse, a white keyboard, a cup of coffee, a small potted plant, a container of colorful pens, a stack of papers, and a laptop. Several pairs of hands are visible, typing on keyboards and writing on papers. The overall atmosphere is one of active work and collaboration.

A positive vision underpinned
by innovative research

Research and
Innovation

Contents

3

Big data approach could shed light on Europe's productivity paradox

5

Location-sensitive policies can better address social inequalities

8

DOIT: practical experiences for future innovators

10

The one-stop shop for open innovation

12

Granular data helps researchers spot hidden productivity drivers

14

Education practices to develop the next generation of change-makers

17

A better way to verify educational and employment credentials

19

New to the EU? SIRIUS wants to make sure you get the job you deserve

21

How automation affects work, economies – and society

23

Introducing BEYOND4.0, a project seeking the evidence on how the digital transformation is impacting our working lives

25

Introducing UPLIFT, a project putting young people's voices at the centre of youth employment policy

Editorial

A positive vision underpinned by innovative research

Following the huge disruption caused by COVID-19, combined with the ongoing digital and green transitions and high levels of socioeconomic challenges lingering on from the last economic crisis of the late 2000s, the future of work, workers and workplaces is currently right in the political spotlight. This CORDIS Results Pack features 11 EU-funded projects that have undertaken innovative research to help chart a way forward for the workplaces of tomorrow.

One of the main aspects of everyday life that COVID-19 completely turned upside down was the world of work. With billions of people across the world confined to their homes, offices have been mostly empty and the 9-to-5 commuting culture has been placed into deep freeze. However, it's also important to remember that not everyone has had the luxury of working from home – those working in manual occupations, in factories, warehouses and retail for example, have not been able to work from home and have faced either unemployment, being placed on state furlough schemes or having to risk infection whilst undertaking their jobs to provide for themselves and their families.

A decade of challenges

As Europe emerges from the pandemic, it seems the world of work is fundamentally changing. But many of the underlying forces driving this change were underway even before the pandemic hit. The EU had already been grappling with issues of social inequality, a lack of high-skilled jobs, insecure employment, and economic decline in many European regions for over a decade.

Much of this can be attributed to the long, drawn out economic hangover from the 2008–2009 financial crisis, subsequent euro crisis and austerity. Many EU countries have also struggled with stagnant or shrinking productivity and there are fears that increased automation will render 'traditional' manual occupations obsolete, resulting in widespread unemployment.

A positive vision of the future of work

However, there are grounds for optimism that Europe can seize the opportunities of the post-pandemic economic recovery that has already begun to gather pace. The EU is determined to be carbon-neutral by 2050 and for this, a radical overhaul of society and the economy will be undertaken through the European Green Deal. The EU complements this objective with its approach to Industry 5.0, targeting the transition to sustainable, human-centric and resilient European industries and potentially offering millions of skilled jobs in reformed or completely new sectors born from this transformation.

To further help Europe in its post-pandemic recovery and to ensure citizens and workers are placed right at the top of the priority list, the European Commission has also recently launched its European Pillar of Social Rights Action Plan. This comprehensive strategy sets out 20 principles that aim to ensure a strong, social Europe that is fair, inclusive and full of opportunity by 2030.

Some of the work-related principles include rights to quality education, training and lifelong learning, equal treatment and opportunities, flexible and adaptable employment, fair wages, a fair work-life balance, social dialogue between employees and employers, and social protection. EU leaders unanimously adopted the 2030 targets of the Social Rights Action Plan during a summit in Porto, Portugal on 8 May 2021.

The research to underpin the vision

As always, you first need the research and innovative solutions to enable the policies. This is where this Pack's 11 projects come into play, all funded through the EU's Horizon 2020 programme. These projects offer a treasure trove of ideas and comprehensive research to help spur the fair, inclusive and opportunities-filled vision the EU has for the future of work, with a heavy emphasis on education, lifelong learning and developing new skills, automation and digitisation, social dialogue, and workplace organisation.

Big data approach could shed light on Europe's productivity paradox

To improve Europe's productivity, we need a richer understanding of what drives it. BIGPROD has 'web-scraped' company information to create unique data sets, to reveal much about the reality of company activities and outputs.

Despite steady technological advancement across several sectors, work productivity across Europe has remained relatively stagnant or even decreased over recent years. This is known as the 'productivity paradox'.



The Crépon-Duguet-Mairesse (CDM) model has provided a seminal framework for investigating productivity as it relates to innovation output and research investment.

Making its own unique contribution to the CDM literature, the EU-supported BIGPROD (Addressing productivity paradox with big data: implications to policy making) project has used the model to analyse data about investment in intangibles, interfirm spillovers and individual innovations.

BIGPROD 'web-scraped' data directly from company websites to identify what these companies considered their innovation outcomes, such as new products or services, alongside any collaborations they had undertaken.

The project-designed platform, which hosts the web scraping programme, collected data from a Europe-wide sample of approximately 180 000 European companies. The initial proof



For productivity investments to have a positive socio-economic impact, policymakers need to know which policy levers to pull. BIGPROD is working to determine how countries can create the right conditions for innovation.

of concept phase of the project has tested the quality and quantity of the data retrievable from the sample.

response rate of around 20% it's actually good," says project coordinator Arho Suominen from the VTT Technical Research Centre of Finland.

Web scraping

The project's sample target was 160 000 to 200 000 company websites, to offer a data set large enough to develop a new way of looking at innovation and productivity. Following the cross-industry standard for data mining and guided by industry classifications, the team focused on three groups: high-tech, low-tech and services.

They had hypothesised that they would get good data from high-tech companies likely to have strong web presences – so already ensuring a large sample size. Whereas they expected data for low-tech companies to be scarcer. Finally for services, the team wanted to develop novel ways to identify service innovation and so for example looked at job advertisement data and at the skills required in the labour market.

"I was surprised by the sheer volume and breadth of data that we were able to collate. As expected, we retrieved good data for the high-tech sample, but not for the low-tech. To compensate, we expanded our analysis to include medium-tech companies," explains Suominen.

The team also created instructive data points on innovation products, collaborations and company activities, opening up the possibility of mapping wider innovation networks. "We have already identified company linkages to research organisations in a totally new way," adds Suominen.

Towards policies for sustainable productivity

BIGPROD was guided by the Sustainable Development Goals (SDGs) as a framework for better understanding of the socio-economic impact. The team are currently analysing how company SDG-related mission and vision statements can indicate how the sustainability transition can become embedded in company targets, an aspect that is instructive for innovation policies.

"For productivity investments to have a positive socio-economic impact, policymakers need to know which policy levers to pull. BIGPROD is working to determine how countries can create the right conditions for innovation," concludes Suominen.

After a series of stakeholder meetings involving policymakers, statisticians, economists and data analysts, the team will soon start the modelling phase to extract further productivity insights from their data. They plan to use open-source Python programmes to allow others to benefit from their results and methodology.

PROJECT

BIGPROD – Addressing productivity paradox with big data: implications to policy making

COORDINATED BY

VTT Technical Research Centre in Finland

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

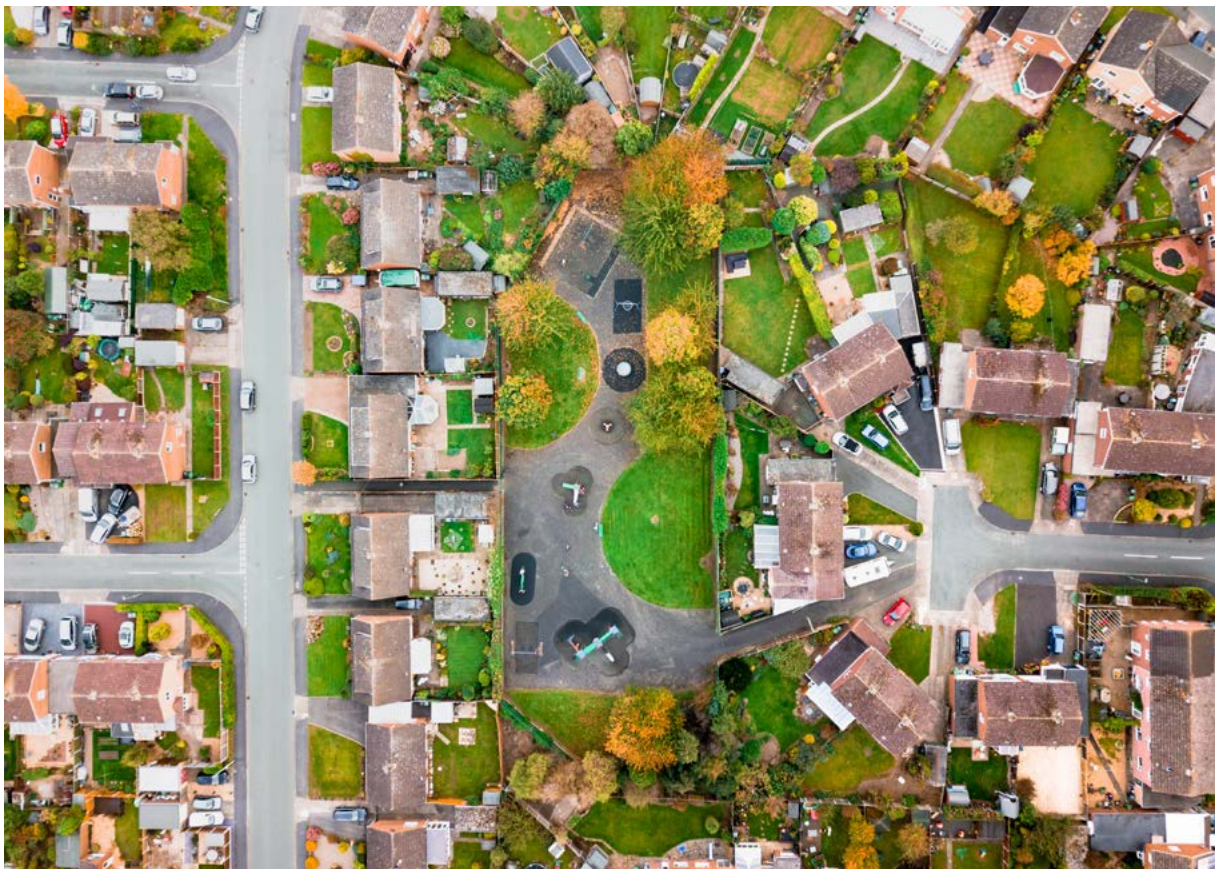
cordis.europa.eu/project/id/870822

PROJECT WEBSITE

bigprod.eu

Location-sensitive policies can better address social inequalities

Despite increasing inequality across Europe, there has been little attention given to how location-sensitive policies impact individual life chances. COHSMO examined how social investment policies can be best designed to tackle social injustice and improve social cohesion.



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Research often misses the influence that territorial factors can have on socio-economic inequalities. Additionally, as solutions exist within regulatory and institutional frameworks, studies often consider location issues from the

standpoint of administrative entities. But understanding the subtleties of local traditions, demographic characteristics, and communities, requires detailed knowledge of specific interactions.

The EU-funded project COHSMO (Inequality, urbanization and Territorial Cohesion: Developing the European Social Model of economic growth and democratic capacity) grew from an acknowledgement that research about the impact of locality on life chances lacked empirical evidence. It has developed a new location-sensitive methodology, informed by social capacity and the meaning that people attach to places.



We found that territorial cohesion results from the interplay between capital, collective action and governance.

“It’s important to look at how policies impact the lived lives of local communities, changing the collective conditions of social and material well-being,” says project coordinator Hans Thor Andersen from Aalborg University, the project host. “We found that territorial cohesion results from the interplay between capital, collective action and governance. It needs both social innovation from below and the mobilisation of assets from above, to match increasingly complex needs with resources.”

COHSMO is now developing an evaluation framework to identify good policy practices.

Comparative studies

COHSMO documented and compared territorial inequalities across seven countries: Austria, Denmark, Greece, Italy, Lithuania, Poland and the United Kingdom. Case studies were conducted in three municipalities in each country – representing urban, suburban and

rural communities – providing an overview of the most important resources, alongside entrepreneurial initiatives. Each municipality included was responsible for key policies related to childcare, vocational and educational training, labour market policy, area regeneration and economic growth.

The team conducted around 75 interviews in each country with governance, community and business actors, alongside a stakeholder survey. The research was augmented with document analysis as well as regional and national Eurostat data.

“Interestingly, we found that ‘spatial narratives’ are key to territorial cohesion and policies. In Denmark, local narratives about a sense of belonging can mobilise communities. In Lithuania, the dominant narratives identify local characteristics, championing the socio-economic potential of individual regions,” notes Andersen.

COHSMO compared service provision at local, regional and national levels, finding that Denmark stood out as having high local financial resources and competence, while other countries prioritised financial control regionally (especially Poland and Italy) or nationally (notably Lithuania).

Most cases highlighted economic growth policies over social cohesion policies. While social segregation was unexpectedly low in big cities such as Vienna and Milan, it was actually high in Aarhus.

“While Denmark having both high local authority autonomy and social segregation seems contradictory, it highlights the importance of context. In Denmark housing is not a locally determined issue, resulting in some housing estates being characterised as ‘ghettos’, with extreme solutions now being proposed nationally, against local wishes,” Andersen explains.

The potential of spatial planning

By focusing on the reciprocal relationship between territorial cohesion and location-sensitive social investment policies, COHSMO revises some of the precepts underlying the European Social Model. COHSMO's findings highlight that the link between economic progress and social progress is often uneven, as each country balances welfare and economic policies differently.

The COHSMO team reports that institutions from several countries are increasingly adopting location-sensitive planning processes such as: mobility infrastructures connecting peripheral neighbourhoods and more equitable and accessible urban public services.

The team are further developing their findings, including an examination of the degree to which urban concentrations are a precondition for economic growth, considering factors like local natural assets such as renewable energy potential. "The

implication is that for effective territorial cohesion policies, local authorities need decision-making and fiscal autonomy," concludes Andersen.

PROJECT

COHSMO – Inequality, urbanization and Territorial Cohesion: Developing the European Social Model of economic growth and democratic capacity

COORDINATED BY

Aalborg University in Denmark

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

cordis.europa.eu/project/id/727058

PROJECT WEBSITE

cohsmo.aau.dk



DOIT: practical experiences for future innovators

In a digitalised world, the capacity to turn ideas into concrete innovation has become priceless. The DOIT toolbox aims to enable 6 to 16 year-olds to thrive in this new context.

A memorandum for entrepreneurial skills in the digital market will soon be circulated across Europe. Its goal? Ensuring that, in the future, young people with a creative mindset can turn their ideas into innovations, improving the lives of European citizens.

It's not just wishful thinking. The organisations behind this memorandum have been working together under the DOIT (Entrepreneurial skills for young social innovators in an open digital world. A European Initiative) project



© Salzburg Research

since October 2017, and they have a major trick up their sleeves: a toolbox providing open educational resources under an open licence.

“A more engaging and practice-based approach is needed to provide young learners with the mindset and skills they need to become innovative citizens. What we suggest is to empower them through collaborative work on creative solutions for societal issues,” explains Sandra Schön, senior researcher at Salzburg Research and DOIT coordinator.

Showcasing the DOIT toolbox

The DOIT toolbox consists of an interactive city map with different ‘buildings’ or makerspaces. Each makerspace represents a different phase in the development process of a project and contains various materials. The ‘wall of failures’, for instance, is a training course that will help students in dealing with failures and setbacks during a project while remaining proud of themselves. The training materials cover all the steps of entrepreneurship, but first and foremost they push towards increased collaboration.



This happens already in a growing number of makerspaces around Europe, where like-minded people get together and work on innovative projects using various digital and other productive tools.

“This happens already in a growing number of makerspaces around Europe, where like-minded people get together and work on innovative projects using various digital and other productive tools,” says Schön. “Some makerspaces have already been set up in pioneering schools. These can boost practice-based, engaging and meaningful learning of social entrepreneurship.”

The DOIT approach has been trialled and evaluated in pilots in 10 European countries. These pilots involved a total of 1 002 children from 6 to 16 years old, with the evaluation showing encouraging results such as increased creativity, self-efficacy and entrepreneurial intentions amongst participants.

“This was really unexpected,” Schön adds. “Existing research had shown lower self-efficacy scores following entrepreneurial education interventions for the targeted age ranks, mostly due to the realisation that being an entrepreneur is not easy and own competences may not be as well developed as needed. We were positively surprised to see this as not the

case for the DOIT pilots: We could witness moderately to significantly higher scores in the younger (6 to 10 years) and older (11 to 16 years old) age groups after the pilot. Our guess is that the makerspace as an open learning space could be the factor for this positive development.”

Integrating DOIT into European curricula

DOIT findings and insights can be found across several reports and publications, including specific ones on how to reach girls, how to work with disabled children or how to work with pop-up makerspaces in schools. Now, the team will be focusing on getting the word out through its upcoming memorandum.

“Our objective is to get support for the integration of DOIT activities into European curricula and education policy strategies. Of course, this is a challenge, but the Council of the European Union’s Recommendation on Key Competences for Lifelong Learning makes us confident in our chances. Under point 2.5 the Council asks Member States to pay special attention to ‘nurturing entrepreneurship competence, creativity and the sense of initiative especially among young people, for example by promoting opportunities for young learners to undertake at least one practical entrepreneurial experience during their school education.’ Our memorandum, which suggests a DOIT experience for every young learner between 6 and 16 years old, would achieve just that,” Schön concludes.

PROJECT

DOIT – Entrepreneurial skills for young social innovators in an open digital world. A European Initiative

COORDINATED BY

Salzburg Research in Austria

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

cordis.europa.eu/project/id/770063

PROJECT WEBSITE

doit-europe.net

The one-stop shop for open innovation

When it comes to innovation, one of the key challenges facing Europe is fragmentation. INVITE took collaborative open innovation approaches and gave them a 2.0 twist to help Europe's innovation ecosystem flourish.

Across Europe, promising ideas and research results do not always flow beyond organisational or national boundaries to reach the people with the drive, skills and capacity to commercialise them. Additionally, small and medium-sized enterprises (SMEs), which tend to be great innovators, often lack access to finance.

Inspired by open innovation (OI) approaches, the EU-supported project INVITE (Co-designing and piloting demand-driven mechanisms, skill-sets and measures for stimulating and facilitating open innovation across European innovation systems) helped SMEs develop international collaborations for

complementary competencies, access to external resources and risk sharing.

40 SMEs were supported by INVITE's voucher scheme offering access to tailored business support services to add value to their OI projects. In parallel, an e-learning programme trained over 500 innovators to develop their OI skills, while 11 SMEs on the project's co-investment scheme improved their investment readiness. The project also developed, pilot-tested and fine-tuned a co-designed digital platform, OI2Lab, which supported over 540 registered users.



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The lessons learnt throughout INVITE were compiled in a guide that was disseminated to 230 policymakers and funders across 158 EU regions.

“Our pilots could be easily replicated in other regions. Our model requires relatively little funding and can be tailored to local circumstances and needs,” notes project coordinator Kostas Giagtzoglou from Q-PLAN INTERNATIONAL, the project host.

“Surveys indicated that these pilots improved innovation at the company and regional level. Company competitiveness and growth were enhanced through new products/services better responding to customer needs, increasing access to markets. At the regional level, more innovative solutions coming from SMEs, along with increased turnover, will drive growth and create jobs,” says Giagtzoglou.

Open Innovation 2.0

INVITE’s OI cornerstones are systematic networking and integrated collaboration across organisations and borders. “With this approach, innovators can achieve more, faster than they could independently,” explains Giagtzoglou.

After analysing the OI landscape in Europe, the INVITE team brought together expert stakeholders from industry, academia, government, civil society and the public and private sector, to co-design OI support measures.

These measures were then deployed and tested in real-life business conditions across Europe through three pilots: a voucher scheme, an e-learning programme and a co-investment scheme. Two pilot rounds were conducted for each, facilitated by OI2Lab’s digital tools and services.

INVITE’s voucher scheme awarded EUR 5 000 to 40 SMEs from 13 countries after challenge-based competitions, enabling the winners to collaborate with organisations in other countries to co-create innovative solutions. In tandem, SMEs could take advantage of INVITE’s e-learning programme, with modules covering business, innovation, networking and the practicalities of managing OI processes. This was augmented with interactive webinars provided by expert trainers.

INVITE’s co-investment scheme was also trialled. This scheme sought to improve communication between innovators and private investors, to reduce the perceived risk of OI investment. Eleven SMEs from four countries were supported to help them develop promotional tools such as videos, improve business plans and hone their pitching skills.

The OI2Lab, developed by the project, provided an online hub for innovation communities. Users accessed digital tools and services to find innovation and funding opportunities, post collaboration calls themselves and ultimately co-create innovations. The platform also provided access to the e-learning programme.



INVITE collated opportunities in one place, connecting otherwise fragmented innovation communities and services.

A one-stop innovation shop

With OI a lever that the EU can use to tackle industrial and societal challenges, INVITE’s support measures could be adjusted by policymakers and deployed at regional or national level.

“While many public and/or private intermediaries already promote OI opportunities through online platforms, they often operate in silos. INVITE collated opportunities in one place, connecting otherwise fragmented innovation communities and services,” concludes Giagtzoglou.

PROJECT

INVITE – Co-designing and piloting demand-driven mechanisms, skill-sets and measures for stimulating and facilitating open innovation across European innovation systems

COORDINATED BY

Q-PLAN INTERNATIONAL in Greece

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

cordis.europa.eu/project/id/763651

PROJECT WEBSITE

invite-project.eu



Granular data helps researchers spot hidden productivity drivers

Increased productivity could maintain and even improve living standards, despite an ageing population reducing the size of the workforce. Creating a cross-country data infrastructure with micro-level productivity indicators, MICROPROD supports planning for a more productive future.



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Part of the explanation for the European 'productivity paradox' – whereby despite technological advancement productivity is at best stagnant, at worse declining – lies in the measurement of productivity.

Recently, attention has been focused on the influence of 'intangible' investments. These are difficult-to-measure activities,

for example research and development or data and software development, that alter the traditional relationship between productive inputs and outputs. Measuring these intangibles and their effects benefits from granular data.

Aggregate productivity grows either because all or most companies improve, or because the more productive firms

grow substantially relative to less productive firms. Both processes are affected by intangible assets. Access to individual company-level data allows researchers to identify which process is driving growth.

The EU-funded MICROPROD (Raising EU Productivity: Lessons from Improved Micro Data) project integrates new, internationally comparable, micro-level data into a database established in collaboration with several European national statistical institutes.



Most urgently, our findings and company-level data can inform policymaking about the phasing-out of COVID-related support packages.

“Our data shows that at the company level, investment in intangible capital seems a strong predictor of higher productivity. Also, as different intangible assets might affect productivity differently, there is value in accounting for them separately and in detail,” explains project coordinator Steffen Müller from the Halle Institute for Economic Research.

Another key finding was that intangible investments are concentrated in a few leading companies, with many others investing very little in intangibles. This raises policy questions about access to financing and whether there is a genuinely level playing field when it comes to competition.

The Micro Data Infrastructure (MDI)

One of the main aims of MICROPROD was to kick-start the development of a permanent, cross-country, productivity data infrastructure. This will be of value to policymakers considering growth-oriented policies or structural reforms, as well as researchers assessing the functioning of the economy.

Using business registers, the team collated company-level information about traditional productive inputs and outputs, such as labour and tangible capital. This was combined with detailed data on intangibles, extracted from existing micro-level data sets such as the Community Innovation Survey and the ICT usage survey. This emerging data set was further complemented with trade data such as that from international sourcing statistics.

“MDI’s interface gives access to analytical tools to study productivity dynamics and experiment with new determinants and measures of productivity,” says Müller. “The pandemic has underlined the need for secure research access to harmonised European microdata such as this, to understand productivity and its drivers.”

When the micro informs the macro

While MICROPROD’s research highlights the relevance of intangible capital to drive productivity, it also outlines the many factors – such as company size, sector or location – which explain investment variations.

Furthermore, the researchers recognise that most European companies lack ready access to finance support for investments, benefiting those already with these resources, potentially stifling competition and innovation.

While not specifically making policy recommendations, MICROPROD emphasises the need to acknowledge that businesses and workers may have lost out from macro-level trends such as digitalisation and the rise of China. This could lead to policies that support training or employment mobility.

“Most urgently, our findings and company-level data can inform policymaking about the phasing-out of COVID-related support packages, to safeguard productive firms, while avoiding the artificial support of ‘zombie’ companies unlikely to prove viable,” adds Müller.

Towards this end, MICROPROD is currently gathering microdata from across Europe to understand how the COVID-19 pandemic has impacted companies, sectors and the economies of countries.

PROJECT

MICROPROD – Raising EU Productivity: Lessons from Improved Micro Data

COORDINATED BY

Halle Institute for Economic Research in Germany

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

cordis.europa.eu/project/id/822390

PROJECT WEBSITE

microprod.eu

Education practices to develop the next generation of change-makers

Social entrepreneur and innovation skills are needed for a just, sustainable, prosperous and inclusive European future. NEMESIS has created an educational model, alongside practical tools, to improve the teaching and learning of core change-making skills and competencies.

In providing the right employability skills for young people – thereby reducing poverty and social exclusion – European education systems have faced several challenges recently, most prominently digitalisation, economic austerity and the COVID-19 pandemic. While predicting the skills needed is difficult, socio-economic forces suggest that entrepreneurship, innovation, creativity, problem solving, communication and teamwork will be key.

Aware that educational changes need to be based on new ways of teaching and learning, the EU-funded NEMESIS (Novel Educational Model Enabling Social Innovation Skills development) project designed a Social Innovation Skills Model to help young people become change-makers. The methodology is participatory and leverages open technologies to increase educational access.

“Based on a needs analysis with teachers, our approach includes practical learning tools and materials to introduce social innovation into the curriculum,” says project coordinator, Aristidis Protopsaltis. “After evaluation in real conditions, it has proven effective in supporting the competences necessary for productive and engaged citizens.”

Competencies, content and collaboration

NEMESIS developed a framework of 13 competences necessary for social innovation. These fall under three interlinked categories: identifying opportunities to create social value; building collaborations and forming relationships for transformation; and taking concrete actions.

“Our approach developed projects with students through ‘co-creation labs’. These benefitted from the involvement of over 100 social innovation practitioners (SIPs) representing a wide range of stakeholders including non-profits, local authorities, enterprises, schools, universities and parent associations,” notes Protopsaltis from Friedrich–Alexander University Erlangen–Nürnberg, the project coordinator.

Helped by consortium partners, including the SIPs, the project developed a Social Innovation Open Learning Platform to offer a protected social innovation workspace for collaboration on projects and content generation.



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Working through projects or 'labs' initiated by teachers and students, participants use authoring tools to co-create resources like learning modules and wikis. Knowledge and documents can be shared using an internal mail system and calendar function. Students can contact SIPs relevant to their projects for advice, and contribute to the online learning community by creating digital assets, such as video success stories.

The platform is based on the ILIAS Open Source Learning Management System and published under a General Public Licence free of charge. To date, it has hosted around 300 participants.

Indicators of success

Eight schools (a mix of primary and secondary) from five countries (France, Greece, Portugal, Spain and the United Kingdom) took part in the first piloting year, developing 18 projects. The schools also created 14 digital stories that were uploaded and shared.

One project example is the United Kingdom's LEAF Centre project to renovate the old caretaker's house at Rockingham Junior and Infant school. The whole school, alongside representatives of the police, municipal council, church and parents are working with an architect to redesign the building, repurposing it for student needs. Funding has already been secured for the commencement of the work.



Based on a needs analysis with teachers, our approach includes practical learning tools and materials to introduce social innovation into the curriculum. After evaluation in real conditions, it has proven effective in supporting the competences necessary for productive and engaged citizens.

The second pilot year, which started with around 50 schools and more than 5 000 students involved directly or indirectly, has unfortunately been delayed by the pandemic. “This forced us to prioritise the online aspects of the co-creation labs and to introduce new project elements such as a serious game about social innovation and the sustainable development goals and a comprehensive massive open online course (MOOC) for teacher training,” adds Protopsaltis.

The NEMESIS model could help spur on young people to create new businesses, third sector organisations or community initiatives, increasing youth employment, while helping forge a more sustainable and equitable economy.

The team is already expanding the NEMESIS approach into different educational areas, grades and geographical areas – the BUFSIE project into higher education and Change Shaping Schools into primary and secondary schools, Social and Cultural Innovation Labs (SCILs) are engaging the cultural and creativity sector to build digital art capacity in schools.

PROJECT

NEMESIS – Novel Educational Model Enabling Social Innovation Skills development

COORDINATED BY

Friedrich–Alexander University Erlangen–Nürnberg in Germany

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

cordis.europa.eu/project/id/770348

PROJECT WEBSITE

nemesis-edu.eu



A better way to verify educational and employment credentials

For recruiters, the process of trying to verify an applicant's credentials can be both time-consuming and frustrating. To help streamline and simplify the process, one EU-funded project is using blockchain, semantics, data analytics, and gamification technologies. The result could disrupt the way we evaluate accredited educational titles and other qualifications.

Recruitment is a lengthy affair, one that starts with combing through hundreds, if not thousands, of applications and CVs, weeding out the unqualified candidates, and then shortlisting the remaining applicants.

"As if the process wasn't challenging and time-consuming enough, there's also a lot of variation in educational credentials," says Panagiotis Kokkinakos, a researcher at EPU-NTUA, a multidisciplinary scientific research unit in Greece.





"Instead, every country and institution uses different formats, different documentation and different databases, making it extremely difficult for recruiters to verify an applicant's credentials."

According to Kokkinakos, education credentials have largely resisted the pull of technology. But, through initiatives like the EU-funded project QualiChain (Decentralised Qualifications' Verification and Management for Learner Empowerment, Education Reengineering and Public Sector Transformation), this could soon change.

"By leveraging the power of blockchain, semantics, data analytics, and gamification technologies, QualiChain aims to disrupt the way we evaluate accredited educational titles and other qualifications," explains Kokkinakos, who serves as the project's manager.

A decentralised platform

At the heart of the project is the creation, piloting and evaluation of a decentralised platform for storing, sharing and verifying education and employment qualifications. "Our focus is on accessing the implications and the impact of the prescribed solution's utilisation, whose disruptive potential lies in both the exploitation of the innovative features of the individual technologies, as well as their unique use in a new field and for providing a set of baseline services," remarks Kokkinakos.

The platform's core services include: awards/qualifications archiving; awards/qualifications verification; qualification portfolio management; career counselling and intelligent profiling; competency management; competency evaluation and development; and consulting and decision support.

Ongoing pilot programmes

Each of these services is currently being piloted in several real-life scenarios. For example, the lifelong learning pilot is investigating how blockchain technologies can support lifelong learners in their learning journey and in advancing their careers. As individuals reach certain milestones in their studies, they earn Smart Badges, which include data about the skills they acquired. These Smart Badges are then stored on the blockchain, ensuring the validity of the awarded accreditation and eliminating the risk of fabricated qualifications.

"As learners continue to earn these badges, they start receiving personalised recommendations about the latest job offers that match their skills," adds Kokkinakos. "Based on the skills needed for the job market, they also receive recommendations about what to study next."

By leveraging the power of blockchain, semantics, data analytics, and gamification technologies, QualiChain aims to disrupt the way we evaluate accredited educational titles and other qualifications.

Other pilot scenarios include smart curriculum design, staffing the public sector, and providing recruitment and competency management services.

A big step forward

Following the pilots' initial results, the project has developed a beta version of the QualiChain platform, which is set to roll out in the first half of 2021. Furthermore, to ensure the platform's uptake, the project is also collaborating with several leading EU initiatives, including DE4A, KRAKEN and SEAL.

"Our aim is to offer a viable, trustworthy and financially sustainable solution capable of transforming and revolutionising everything from public and private education to the labour market, policymaking, and public sector administrative procedures," concludes Kokkinakos. "Thanks to the exceptional collaboration among the project's partners, we are now one big step closer to doing exactly that."

As the project remains ongoing until December 2021, researchers are currently working to further disseminate the platform's value by speaking at conferences and publishing papers. The project is also organising a special journal issue with Elsevier on blockchain-based decentralised solutions for learner empowerment, education reengineering, and public sector transformation. Its call for submissions is open until 1 February 2022.

PROJECT

QualiChain – Decentralised Qualifications' Verification and Management for Learner Empowerment, Education Reengineering and Public Sector Transformation

COORDINATED BY

National Technical University of Athens in Greece

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

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PROJECT WEBSITE

qualichain-project.eu



New to the EU? SIRIUS wants to make sure you get the job you deserve

Migrants are still frequent victims of a system that misjudges them based on their legal status. The EU-funded SIRIUS project has been tackling this issue with a new web-based application, policy analysis and awareness campaigns. Thanks to the project's research, migrants are now better armed to face the labour market.



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Let's face it: Across Europe, migrants are still too often perceived as a socio-economic burden unless they can fill jobs that would have remained vacant otherwise. Such unfair focus on the negative aspects of migration purposely ignores much more

important truths, simply because they don't fit with the narrative. Migrants mitigate the effects of demographic decline and ageing, bring us cultural diversity, and make concrete contributions to our economies.

This wrongful vision results in several barriers to integration, one of them being more difficult access to jobs. “The main problem here is how EU countries have come to provide migrants with a specific ‘legal status’ that effectively separates them from the rest of the population. Migrants are assigned to a legal category which directly affects their capacity to be hired. Asylum seekers for instance, are banned from work in many EU countries for a long period of time. Such a gap in their CV creates a vicious circle, which is only made worse by the lack of mechanisms acknowledging past educational achievements and skills, not to mention discrimination,” says Simone Baglioni, professor of Sociology at the University of Parma.

With funding under the project SIRIUS (Skills and Integration of Migrants, Refugees and Asylum Applicants in European Labour Markets), Baglioni and other project partners could investigate labour market barriers and enablers for newcomers to the EU. They combined an assessment of policies and legal frameworks with societal dynamics and analysis of individual experiences, and eventually generated a much better understanding of the complexity of labour market integration for post-2014 migrants.

A serious game to prepare newcomers

The SIRIUS findings culminated in the creation of a serious game application called WORKEEN, created by a team of political scientists, sociologists, economists and software engineers. “The application provides practical guidance and hands-on soft skills training for any migrant entering the labour market for the first time,” Baglioni notes. “It’s one of the first of its kind, interactively guiding jobseekers through the two stages of job search and workplace integration by means of gaming scenarios.”

In the first step, WORKEEN guides migrants as they follow all the necessary steps to secure a job. The application provides a checklist that helps them identify required documentation, before delivering guidance on how the migrant should present his/her skills and past experiences. Additional information is provided on how to contact a placement agency, write a cover letter and CV, and prepare for a job interview.



We have created scenarios to help users navigate challenging situations from simple miscommunication in everyday encounters to facing bullying or abusive behaviour.

The second step helps newly appointed migrants succeed in their new role, as Baglioni explains. “We have created scenarios to help users navigate challenging situations from simple miscommunication in everyday encounters to facing bullying or abusive behaviour.” The WORKEEN application is available from the Google Play Store for Android devices, free of charge. It’s available in English, Arabic, Farsi and six different European languages.

Besides their work on the WORKEEN application, the project team has also been raising awareness of the conditions migrants live in. The interactive documentary ‘Workers: 11 stories from the European job market’, for instance, provides the broader public with first-hand insight from 11 refugees and migrants who’ve struggled with the European job market.

The consortium has also successfully entered the political and academic debate on migrants, most recently with an open access book discussing how policies and legal frameworks shape opportunities for labour migration. “We hope the project will contribute by raising awareness about the barriers that should be removed; but most importantly by providing migrants with a qualified voice to speak with policymakers, social actors the media and ordinary citizens. At the end of the day, all we wish for is a common vision of a cohesive society respectful of diversities,” Baglioni concludes.

PROJECT

SIRIUS – Skills and Integration of Migrants, Refugees and Asylum Applicants in European Labour Markets

COORDINATED BY

University of Parma in Italy

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

cordis.europa.eu/project/id/770515

PROJECT WEBSITE

sirius-project.eu



How automation affects work, economies – and society

Automation offers pros and cons. To help governments optimise both, the EU-funded **TECHNEQUALITY** project is providing empirical evidence on how automation will impact European society – and what needs to be done today to fully prepare for an automated future.

Automation offers the promise of increased productivity, competitiveness and well-being. But these same technologies, including robotics, big data, machine learning and artificial intelligence (AI) will also have a major impact on social inequalities.



It is this latter point that tends to make people nervous about – even hostile against – all things automatic. “Will my job be replaced by a robot?” “What can I do to prepare myself for an automated future?” “How can we redesign the social welfare system to function in an automated world?” “Can we afford the necessary social programmes?”

These are just some of the most commonly asked questions about automation – and the questions that the EU-funded project TECHNEQUALITY (Technological inequality – understanding the relation between recent technological innovations and social inequalities) intends to answer.

“Our goal is to provide empirical evidence on how automation is impacting – and will continue to impact – European societies,” says Mark Levels, a professor at Maastricht University, the project’s lead partner.

A manageable risk

To accomplish this, project researchers are studying how AI and robotics impact work. They are also analysing how automation could affect various social groups differently and how technological innovations will likely change social inequalities.

“Our researchers are working shoulder-to-shoulder with policymakers to find out how governments can best balance the need to optimise the economic benefits of automation with the need to mitigate against its potential social risks,” explains Levels.

Although still a work in progress as the project will end in December 2021, researchers have already made several important findings, including about how automation will impact the labour market. For example, the project estimates that anywhere from 5 to 44% of all jobs in Europe could be replaced by automation.

Perhaps more importantly, they have determined that the effect that this automation will have on European society depends on a wide range of variables, including governance. “Our models certainly suggest that automation is a manageable risk,” he notes.



Although tremendously important for economic growth in the EU, automation may also spawn societal volatility, increased inequality, reduced social mobility, and new social strife.

According to Levels, if governments take the right steps, European economies could flourish, and mass unemployment can be prevented: “The key, however, is that governments must act now.”

Preparing for an automated future

Based on these findings, the project has produced policy suggestions that can help regional, national and international governments better respond to the challenges of automation.

“Although tremendously important for economic growth in the EU, automation may also spawn societal volatility, increased inequality, reduced social mobility, and new social strife,” says Levels. “If TECHNEQUALITY can help governments prepare for this future by outlining the intended and unintended consequences of policy responses, our mission will have been a success.”

As they are moving into the final 6 months of the project, the research team is currently working to finalise their empirical analyses, with a focus on how automation will impact education, welfare and public finances. Researchers are also in the early stages of launching a follow-up project that would further expand on and advance TECHNEQUALITY’s findings.

“We set out to produce science that matters to society,” concludes Levels. “We asked some big, challenging questions and provided practical answers that governments and businesses can work with – which is something I am very proud of.”

PROJECT

TECHNEQUALITY – Technological inequality – understanding the relation between recent technological innovations and social inequalities

COORDINATED BY

Maastricht University in the Netherlands

FUNDED UNDER

Horizon 2020-SOCIETY

CORDIS FACTSHEET

cordis.europa.eu/project/id/822330

PROJECT WEBSITE

technequality-project.eu



Introducing BEYOND4.0, a project seeking the evidence on how the digital transformation is impacting our working lives

Taking its name from the so-called Fourth Industrial Revolution, the BEYOND4.0 project has set itself the task of providing research-based advice for policymakers and stakeholders on the impact, challenges and opportunities of rapidly advancing digital technologies in relation to the future of work and welfare.

The first industrial revolution was powered by water and steam, the second by electricity to allow for mass production, the third began in the 1980s driven by the growth of IT technologies. The fourth

supposed Industrial Revolution is happening right now and builds on the third by advancing the digital transformation further and blurring the lines between the physical, digital and biological worlds.



CORDIS Results Pack on the future of work
A positive vision underpinned by innovative research

Of course, such radical transformation will deeply impact (and arguably is already impacting) our lives, especially with regards to the world of work. The project BEYOND4.0 (Inclusive Futures for Europe BEYOND the impacts of Industrie 4.0 and Digital Disruption) focuses on a range of possible consequences of the digital revolution, many of which are already being grappled with by policymakers and will have new resonance in the post-pandemic world. These include high unemployment, job and social polarisation, problematic skills development and populist politics.

Possible solutions put forward to these pressing challenges include a Universal Basic Income and taxing companies that embrace more automation at the expense of workers. However, many of these solutions are not backed by concrete scientific evidence. BEYOND4.0 was organised to rectify this and aims to provide new scientific insight into technological transformation, how companies are dealing with this transformation and how this transformation is impacting the world of work, specifically on skill needs, education, training and value creation by companies.

The project is specifically focusing on two main technological transformations – the digitisation of production through automation/robotics and the digitisation of work through the platform economy (or 'Uberisation').

Through its research, BEYOND4.0 will offer concrete policy options on fiscal and welfare policy and identify social investment approaches and tools that can be wielded for inclusive growth.

BEYOND4.0 began in January 2019 and will run through to December 2022 and has received almost EUR 3 million in funding through the Horizon 2020 programme.

PROJECT

**BEYOND4.0 – Inclusive Futures for Europe
BEYOND the impacts of Industrie 4.0 and Digital
Disruption**

COORDINATED BY

Netherlands Organization for Applied Scientific
Research (TNO) in the Netherlands

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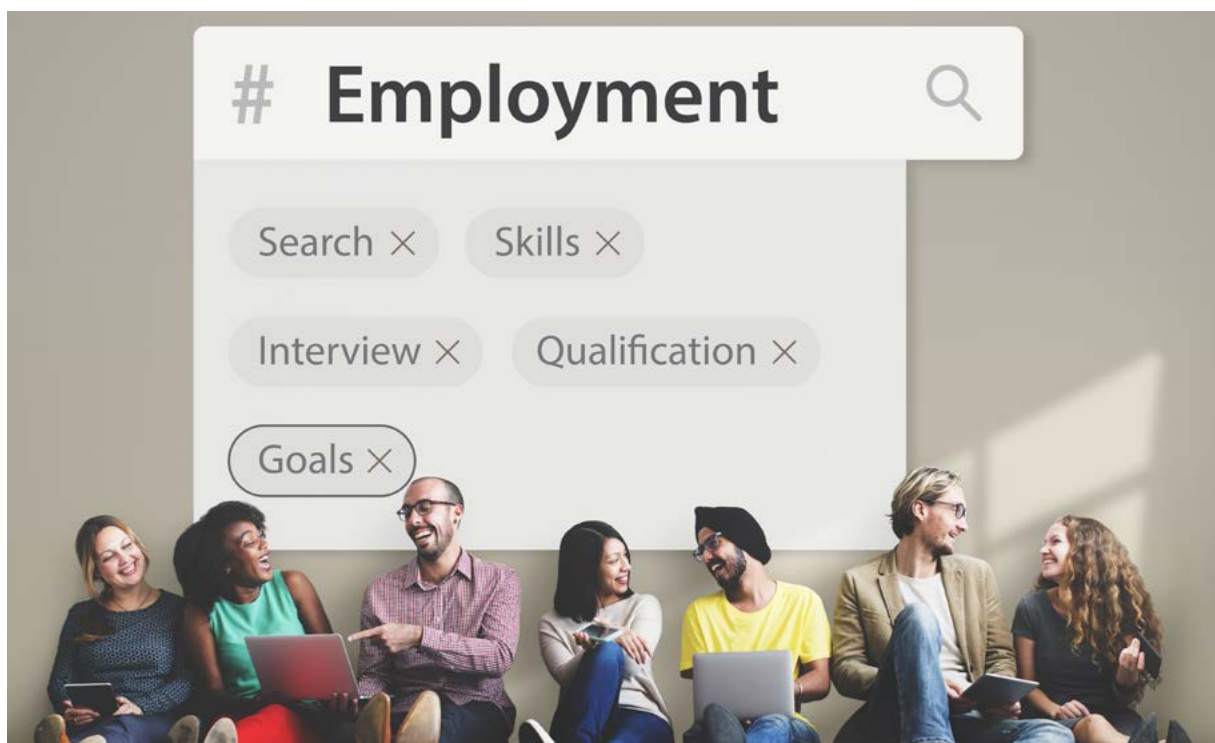
beyond4-0.eu



Introducing UPLIFT, a project putting young people's voices at the centre of youth employment policy

Addressing inequalities in urban and peri-urban contexts is at the heart of the UPLIFT project. This is particularly relevant as social and economic inequalities have been growing in most wealthy countries in recent decades, even more so since the 2008-2009 financial crisis. With a focus on vulnerable youth, the project aims to develop a Reflexive Policy Agenda through participatory co-creation that will hopefully lead to more flexible, adaptive policies.

The 2010s was not kind to many young Europeans. Coming of age and entering the workforce just before, during or just after the late 2000s economic crisis, young people have faced high unemployment or very unstable employment conditions throughout the decade. Now, due to COVID-19, they're experiencing their second major economic slump in just 10 years.



Policymakers and traditional political elites have been viewed by many – young and older – as offering few real solutions to these challenges and this in turn has contributed to the rise of populist politics throughout Europe.

The EU-funded UPLIFT (Urban PoLicy Innovation to address inequality with and for Future generaTions) project aims to address these very real socio-economic challenges, that have only been heightened by the COVID-19 crisis, by putting young people at the centre of their research. Young people have become the demographic age group most at risk of experiencing poverty in Europe, and in urban settings these disparities are particularly prevalent.

UPLIFT's focus on understanding the patterns and trends of inequality across Europe, how individuals experience and adapt to inequality and undertaking detailed research in 16 different European urban regions, will eventually result in a co-created policy tool – the Reflexive Policy Agenda – that will offer tangible policy solutions to address and reduce inequality and socio-economic divisions. To narrow down their scope, UPLIFT chose to focus on housing, education and employment policies.

Importantly, this tool will be co-created with the communities that UPLIFT is working with, specifically communities in four of

its chosen cities, those being Amsterdam, Barakaldo (Spain), Tallinn and Sfantu Gheorghe (Romania).

The 3-year UPLIFT project began in January 2020 and will end in December 2022. It has received just under EUR 3 million through the Horizon 2020 programme.

PROJECT

UPLIFT – Urban PoLicy Innovation to address inequality with and for Future generaTions

COORDINATED BY

Metropolitan Research Institute (MRI) in Hungary

FUNDED UNDER

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The EU's Conference on the Future of Europe, which aims to put citizens at the heart of deciding the EU's future priorities and direction, is also actively discussing many of the work-related issues featured in this Results Pack. To find out more and to discover how you can take part in the discussion, go to futureu.europa.eu

Learn more about EU policy on the future of work: europa.eu/IRC47PGR

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RESEARCH*EU MAGAZINE ISSUE 101 TRANSFORMING EUROPEAN HEALTH SYSTEMS IN THE WAKE OF COVID-19

After the severe challenges of the pandemic, new technologies and processes can help make European health systems more efficient, more advanced and work better for patients and citizens. This issue of Research*eu meets seven EU-funded projects that provide valuable insights into how our healthcare systems could be transformed in the years to come.



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