



Sustainable work in Horizon 2020

– A research strategy for smart, sustainable and inclusive growth.

Introduction

Europe is currently searching for a boost of jobs, growth and investment. In order to attract the world's most talented individuals to the EU's labour market, Europe's competitiveness needs to be strengthened by investment in education and learning. At the same time, the inclusiveness of the European labour market and the return on social investment, require improvements to address the major demographic transformations Europe is facing especially the increase in elderly people and migrants, as well as female labour market participation. Additionally, structural changes also call for a joint venture of flexibility and labour rights within a framework of sustainable employability.

Work and employment must, therefore, be the focus of the European Research Agenda. However, research on "Europe at work" is fragmented and barely visible in the EU's research programme Horizon 2020 – especially regarding the development of sustainable and innovative work systems.

Sustainable work is a generic policy concept to describe the dynamic fit between employees and working conditions. Underpinned by a commitment to promote continual growth and regeneration of human, social, economic and ecological resources, sustainable work promotes health, wellbeing, learning and influence. Working conditions concern not only 214 million European workers and their families, but it also has an impact on efficiency and productivity within enterprise, being able to boost competitiveness. Furthermore, sustainable work can create long-term legacies by making European companies more competitive in the global contest for talent and innovation.

As such, sustainable work is likely to be a key factor in meeting the challenges arising from globalisation; the need to increase productivity, innovation-based growth, and develop smart workplaces that motivates workers and promotes workplace innovation. It will also be vital in addressing demographic shifts (ageing, the shrinking work-population, youth unemployment and migration), and the increasing diversity in working conditions, health and wellbeing of the population.

The Advocacy Platform for Sustainable Work as a Resource for Health, Innovation and growth in Horizon 2020 would therefore propose four major research topics:

- Novel technologies and sustainable work.
- Workplace health strategies for sustainable and inclusive growth.
- Sustainable work and the increasing work force diversity.
- Integrated health and safety concepts for large infrastructure projects and new working environments.



Potential Calls in WP 2018/19

1. Industrial leadership – future production systems

The new industrial policy signifies the *European Union (EU)*'s first step towards a new industrial growth model. Investment is clearly needed for the modernisation of traditional industrial sectors as well as healthcare and the emerging service sector. New value chains and activities with sufficient potential for new growth and employment have to be fostered. This includes nurturing new economic strengths via developing future *Key Enabling Technologies (KETs)*, at the same time as strengthening existing ones. As these are long-term processes, the efforts must be sustained in a consistent way by long-term strategies translated into concrete action plans; on the conversion of social needs into industrial solutions; and on the integration of industry policy with other policies such as employment, education, welfare and sustainable development in a broader context.

Thereby, the starting point must always be the strengthening of the strategic triangle between sustainable development, creation of value added products and services, and high quality work. It is important that the promotion of good work (through strategies of *Occupational Safety and Health* and *Prevention through Design (PtD)*) should be integrated in the development of *New Key Enabling Technologies* from the very beginning. In particular, the *Prevention through Design* approach should be made the standard for all future innovative working environments.

Horizon 2014-2017's priorities currently address “workplaces that motivate the worker” or the “continuous adaptation of work environments with a changing level of automation to evolving production systems” i.e. the continuous adaptation of workplaces to the physical, sensorial and cognitive capabilities of workers (in particular older and disabled people). It is no longer sufficient to simply invest in the newest technologies in order stay ahead of the competitors. Some recent studies indicate that research and technology-led activity accounts for only 25% of innovation, with the remaining 75% of successful innovation being generated by changing managerial, organisational and work practises at enterprise level.

Proposed call: Novel technologies and sustainable work

Specific Challenge:

Novel technologies and manufacturing systems (based on digitalization and advanced material sciences) are dramatically changing the business landscape. They create the conditions for innovative organisational culture and business strategies to thrive; challenging the opportunities for sustainable work. As such, they significantly impact on strategic options and create opportunities and issues that businesses need to address.

Industry 4.0 is the collective term used to describe key elements in the high-tech strategy promoting the computerization of manufacturing. The introduction of the *Internet of things and services* into the manufacturing environment is seen as the launch of a new, fourth industrial revolution. Business will establish global networks that incorporate their machinery, warehousing systems and production facilities in the shape of *Cyber-Physical Systems (CPS)*. These smart factories are expected to facilitate fundamental improvements to the industrial processes involved in manufacturing, engineering, material use and supply chain and life



cycle management. In addition to digitalization, nano materials and additive manufacturing (“3D-printing”) are key concepts/technologies in this context.

Whilst the paradigm shift in human-technology and human-environment interaction brought about by *Industry 4.0*, has the potential to unlock new opportunities (stressing the importance of human work), the challenge is to find ways to build the prerequisites for sustainable work into the system i.e. autonomy, participation, involvement to promote learning, feedback, and structural involvement of workers in the innovation process (for example by utilizing *interaction design* (IxD) for pro-activity when the novel technologies are implemented).

This is important since empowering work environments that enable employees at all levels to use their knowledge, competences and creativity to the full, is a pre-requisite for a successful implementation of *Industry 4.0*. Future and sustainable work should include modern work and office concepts such as empowering job design; self-organised team working; and structured opportunities for reflection. Furthermore, they should highlight learning and improvement; include high involvement in innovation practices; encourage entrepreneurial behaviour at all levels of the organisation; and ensure employee representation in strategic decision-making. Work, health and family relations play an important but changing role and as such aspects to be considered in the development of new models of sustainable work. Novel technology’s impact on the physical/chemical work environment is important in this context.

Scope

Research activities should address the following areas:

- Determination of the prerequisites for embedding novel technologies into an innovative social organisation (within the workplace) i.e. to look for what is important and valuable in a given work context. The aim is to reconcile up-to-date and well performing systems with high engagement and high performance workplaces. The methods should include measuring the impact of *Industry 4.0* on business strategies; organisational cultures and structures; management processes; working conditions and workplaces; as well as accommodations made to worker’s skills and flexibility needs e.g. due to gender, age or inexperience.
- Methods and practical tools for the sustainability of the work (such as proactive means (and prevention) through design methods), developed to address the impact of novel technologies on work content, work processes and the working environment. Focus should be on empowerment; job design; organisational structures; opportunities for learning and improvement; safety and health at work; high involvement innovation practises; and employee representation in strategic decision-making.

Expected impact

- Higher performance against a wide range of business indicators – including potential *win-win* outcomes, which benefit both employers and employees.
- Modern risk-resilient, sustainable and competitive novel technologies and companies.
- Knowledge transfer from industrial high-efficiency production to other sectors (such as service and health-care) and *Small and Medium-sized Enterprises* (SMEs).
- A more wide spread interest across Europe for sustainable work rendering Europe's current and future leading businesses ready for new work concepts i.e. job design; work organisation; skills development; and worker’s co-determination as tools for innovation and growth.



2. Health, Demographic Change and Wellbeing

The need for new knowledge horizons with regard to health, demographic change and wellbeing has to be met under the umbrella of integrated sciences, with a cross-sectoral mission. This implies a combined horizontal and vertical analytical perspective - examining structural and institutional determinants, organizational patterns, and individual characteristics, actions and attitudes.

Current and past *WPs* focus on personalized health in a context of public health - using research and findings from the perspective of genetic testing and pharmacological therapy. However, as work constitutes a major part of most Europeans' life, there is a major unutilized potential in exploring the association between working life or occupation and personalised health.

Health is strongly influenced by the environment the individual is working in and the adaptation of this environment to the health status of the individual. A person with chronic disease may require specific adjustments - not just to be able to work, but to prevent progression of the disease. A focus on personalised health at work could thus contribute to job retention, job quality and at the same time exert a societal impact on levels of employment and productivity. European business can also become more competitive by creating sustainable work, which includes innovative workplace health promotion and prevention measures and, thus, attract high-skilled workers, and new talents.

The environment of the individual is often very complex and difficult to characterize. New technologies have created opportunities for self-monitoring of this complexity using wearable devices that measure heart rate, blood pressure, body posture and movements as well as personal levels of exposure noise and pollutants. The information gathered could and should be interpreted by the individual, but the development of user-friendly interfaces has created a number of new tools for workplace health promotion and health monitoring of special interest for older workers and workers with chronic diseases as well as workers with function impairments or temporarily reduced work ability.

More generally, this development has created an opportunity for companies, and society as a whole, to increase employment opportunity for older workers, for individuals with chronic diseases and for persons with functional impairments. Thus, new technologies, modern job design and sustainable quality jobs (in combination with personalised health care) has the potential to increase job opportunities and promote job longevity for several groups who currently are forced to leave the labour market too early or never get the chance to enter the labour market at all.

Draft Call: Workplace health strategies for sustainable and inclusive growth

Specific Challenge:

Demographic changes have created an ageing and shrinking workforce, and therefore an increased proportion of workers will work with functional impairments, chronic disease or have returned to work after treatment for severe diseases. Up to 23.5% of the working population in the EU-27 is reported to suffer from a chronic illness and 19% is stated to have long-standing health problems. These conditions therefore impact upon a large part of the European workforce. Examples of chronic illnesses are: diabetes, asthma, epilepsy, cancer,

The advocacy platform for Sustainable Work as a resource for health, innovation and growth in Horizon 2020



heart failure, musculoskeletal disorders, chronic obstructive pulmonary disease, hepatitis, HIV, depression, alcohol and drug abuse etc. Important knowledge gaps have been identified with regard to possible effects of working conditions on the prognosis of a chronic disease. The possibility of these groups gaining access to the labour market or returning to work is important for the wellbeing and prosperity of the individual and society.

Thus, it is important for the employer and the employee to be able to identify which work factors impair the prognosis of the illness, and which factors enhance improved work participation – so that personalized interventions can adapt the environment to the health status of the individual.

Scope:

Activities will focus on innovative strategies for sustainable work participation, productivity and risk mitigation for impairment of prognosis in chronic or severe diseases:.

- Innovation actions to support the development of user-friendly devices and software interfaces for monitoring of the environment and the interaction between the environment and the individual.
- Supporting and coordinating scientific activities on associations between prognosis of chronic diseases and the work environment.
- Developing policy documents in dialogue with practitioners.
- Identifying barriers and incentives to work for various groups with reduced work ability as well as employers' attitudes and recruitment strategies.

Expected impact

- Improved employment possibilities for European workers with functional disabilities or chronic diseases.
- Faster and safer return to work for workers after severe disease, and safe work conditions for individuals with chronic diseases or functional impairments.
- Empowerment of the individual – including increased work participation and productivity, based on personalized interventions and the facilitation of new sustainable businesses.
- Increased possibilities for European *SMEs* in the IT-sector to develop a world-leading position in personalized medicine, focused on environmental monitoring and adjustment.
- Improved confidence in a safe and productive work life for individuals with chronic disease or those recovering after severe diseases.
- More productive, healthy work-lives, more sustainable social security systems and inclusive economic growth, if people retire at a later age and in good health via sustainable work.



3. Europe in a changing world – inclusive, innovative and reflective societies.

A sustainable work system and labour market are core components of an *Innovation Union*. The ongoing demographic transformation in Europe (characterized by an ageing population, shrinking work force and expanding migration) calls for new strategies of social and work related inclusion. New doors have to be opened for migrant workers, elderly workers and other groups with low levels of employment. The three pillars of sustainable development, ecological, economic and social dimensions, are also cornerstones in a strategy of inclusive and reflective societies. Furthermore, the Europe 2020 strategy's seventh flagship initiative – "*European platform against poverty*" is to ensure social and territorial cohesion in order to ensure that the benefits of growth and jobs are widely shared, and people experiencing poverty and social exclusion, are enabled to live in dignity and take an active part in society.

To sustain economic growth, prosperity and social development, it is crucial to increase the employment participation of migrants, older workers and other neglected groups. Europe's future prosperity and sustainability largely depends on the ability to take advantage of the potential of all generations, including those arriving to Europe after birth. The current demographic dynamics of Europe has two faces. Firstly, many European countries moving into greying societies are facing a shrinking working population and an increasing segment of older citizens being retired or not active in employment. Secondly Europe is witnessing an unexpected and quickly expanded migration of working-age individuals.

These fundamental societal transformations create great opportunities as well as challenges - raising new demands on the partnership between public sector, the private sector and civil society. An expanding part of the labour market will be staffed *by* the migrant population *for* the ageing population. New jobs will be created and more knowledge is needed about how to create sustainable working conditions and promote workplace innovation in these sectors. A better integration of migrants and migrant workers in to the labour market and creation of sustainable jobs, is a genuine *win-win* challenge both in a European and national context.

The demographic change is also creating a new market for new products, new services and also new forms of social relations and means of creating social capital. A society characterized by increasing social, cultural and ethnic diversity as well as changing life styles and values requires new skills and sets of social capital and competencies.

Draft Call: Sustainable work and an increasing work force diversity

Specific challenge:

Unemployment in the EU has risen sharply since the breakout of the financial crisis in 2008, whereby migrants are especially affected. The crisis in combination with globalisation and rapid technological innovation, has led to a structural change of the economy, where some jobs are lost forever and new jobs will have to take their place. Lay-offs have created slimmed organisations and tougher competition for work, which excludes persons with non-validated knowledge and/or language barriers. Getting migrants into work is not only the key to successful integration. It is also the solution to the demographic challenge (with an ageing and shrinking workforce and the increased caring needs of Europe's elderly population). Yet,



rather than being a part of the solution of creating a sustainable and cohesive society, unemployment among migrants remains high (as well as the risk that they become an additional demographic problem).

Creating new jobs is not enough. To achieve long-term success, it is necessary to bridge the knowledge gap regarding job qualities, social stress and increasing work load for employees with migrant backgrounds in various parts of the labour market. One such field is the expanding private service sector including various forms of jobs with high degrees of ethnic diversity: wholesale and retail trade; transport storage; and communication, social and personal services; hotels and restaurants; cleaning. The same applies to care of the elderly and social services in general.

The new demographic change also has a strong impact on definitions of work – paid and unpaid - as well as job standards and job qualities for which Europe lacks a comprehensive understanding of the long-term consequences. There is a need for European and national policy development to support businesses and the public sector to cope with structural change and adapt workplace strategies for inclusive working life for the new citizens of Europe.

Scope:

Research activities should address the following areas:

- An analysis of working conditions, work environments, skills development and sustainable job qualities in various labour market sectors, in order to contribute to new social innovations and partnership between public sector, civil society and the market. Research aspects should include work-life balance and gender differences.
- Further research is needed on which kind of jobs match the skills and occupational background of various groups of migrants and older workers. More research is needed on the process of job creation at various skill levels, on the role of wage strategies and social agreements as well as employment conditions.
- Identification and analysis of successful policies and programmes encouraging companies and social partners to cooperate in order to better anticipate skills and training needs – including investments in human capital and how to manage the demographic challenges presented in a socially responsible way. Diversity issues (gender, culture, ethnicity, language etc.) should be considered in the context of sustainable quality jobs.

Expected impact

- Research projects are expected to contribute to enhancing Europe's resilience by identifying successful policies and programmes to manage structural change on a company level – implementing work place sustainability.
- The research will advance knowledge on specific aspects linked to career and task-shifting among migrant workers - as well as technical and vocational education, training to facilitate transition during crisis and increased competitiveness based on improved skills.
- Studies and results from research projects on work organization, new skill requirements and social innovations in sectors with many migrants, will facilitate the on-going social transformation of European societies
- The research activities will contribute to an effective anticipation and restructuring, i.e. practises on early anticipation of human capital needs and subsequent investment to ensure sustained competitiveness of the companies.



4. Cross-cutting approach for an integrated EU R&D Strategy

There is a growing need for various forms of integrative policy and knowledge perspectives with regard to EU research programmes. The EU focus on *Responsible Research and Innovation* (RRI) illuminates the need for cross-cutting issues, integrating gender and ethical dimensions, and ensuring access to research outcomes. The generic concept of sustainable work can be seen as a bridge unifying themes from both *industrial leadership* and *societal challenges*. One way of bridging the gap is thematic calls merging issues of occupational health, wellbeing and learning at work, focusing on new production systems, work place innovations, and *Industry 4.0*. The option of joint ventures between Horizon 2020 and the European Social Fund could also be utilised for research areas such as sustainable work.

Interdisciplinary approaches to sustainable work can be analysed in various occupational contexts and sectors of the labour market. Company studies need to cover both the new industry, the diversity of the public sector as well as new collaborative jobs created by the internet revolution and novel technologies. In line with the *Horizon 2020* secure societies program, there is a need for research and innovation activities that helps to protect a large number of European employees, citizens and businesses against malfunction or disruption - with a potentially large impact on public opinion and associated economic and societal costs. Social and technological innovation strategies are crucial challenges in the social dialogue and need to consider a broad comprehension of user involvement.

Novel health and safety challenges associated with large complex infrastructure projects need to be tackled in a way that efficiently minimizes health and safety risks of workers and European citizens. To this end, a pro-active safety culture and an integrated health and safety concept needs to be developed and implemented across all contractors, including the supply chain and throughout all stages of the project. It needs to start at the early planning phase, during its operation and maintenance as well as the deconstruction i.e. the health and safety aspect must be imbedded in the circular economy.

Furthermore, this type of research and innovation activity is closely linked to the *European Structural Funds (ESF)* - in particular the *European Social Fund* and the *European Regional Fund*. They aim to strengthen competitiveness and employment situation by helping Member States, European businesses and regions to enhance access to employment and sustainable inclusion in the labor market by adapting workforces, enterprises and entrepreneurs with a view to improve the anticipation and management of economic change. In particular, such development is promoted by efficient work organizations, promoting social inclusion, health prevention and safety culture. The system model for sustainable work will generally contribute to the three main ESF objectives: Convergence, Regional Competitiveness and Employment, and European Territorial Cooperation.

The primary aim is to enhance the resilience of key economic players by developing and integrating new health and safety management tools with communication interoperability - for the protection of critical infrastructure and new working environments.



Draft call: Integrated health and safety concept for large infrastructure projects and new working environments

Specific challenge:

The main challenge is to develop a preventive and safety culture for large European infrastructure projects. The main source of inspiration is the health and safety project launched during the construction of the Olympic Park and Olympic Village, London 2012.

Large infrastructure projects such as tunnels, airports, bridges or rail connections often involve a large number of employees from different European regions or member states. This poses a number of problems that add to the general high level of risk associated with the construction industry i.e. a transient workforce of project personnel from different cultures and backgrounds are expected to work together in a constantly changing organization of work and structure. These kind of infrastructure projects frequently include special or new working environments and technological innovations - such as off-shore plants, super skyscrapers, human-robot interactions or new materials and new technologies.

There is a need of integrated, modern and innovative health and safety research; such as applications for risk assessment; workplace health promotion; innovative interventions; and e-safety-management platforms into an 'integrated health and safety concept' which could also be transferred into a *Prevention Through Design* standard for European businesses.

Scope: The research should include

- Creation of new and innovative prevention technologies including ICT-, AMI- and virtual reality applications to design safe workplaces for large (cross-country) infrastructure projects and new working environments in the planning and development phase.
- Development and integration of new forms of risk detection, assessment and management.
- Development of a modern, integrated health and safety concept including innovative interventions for different groups of workers, types of jobs and working environments.
- Enhanced prevention through design approaches for health and safety as the basis for developing a safety culture throughout Europe, which could serve as the standard for future large-scale, cross-border projects and new working environments.

Expected impact:

The safety culture approach should enhance the general safety climate, and integrate workplace health promotion initiatives with the ordinary safety management at large construction sites. The main goal is to enable

- The complete prevention of fatal accidents according to the 'Vision Zero' safety culture approach.
- The promotion of general health and wellbeing among involved workers.
- Favorable economic, environmental and social impacts of large infrastructure projects.
- Promotion of a safety culture and vision zero within Europe



- Spin offs of innovative interventions and prevention tools making European businesses ready for the new world of work.

5. Closing remarks

The European Research Area reflects a broad set of research fields, societal challenges, structural transitions, changing demography, new health conditions for its citizens - as well as demand for new industrial leadership, novel technologies and sustainable growth. The European Innovation Union has to cope with the balance between a strong focus on sector expertise and specialization on the one hand, and cross-cutting actions and policy integration on the other. The promotion of research on sustainable work and workplace innovation illuminates this specialization-integration dilemma. The major mission of this strategy is to bridge the gap between demography and health and industrial leadership. The human factor in the innovation process cannot only be seen as a production component or an investment area. It is as important to consider empowerment, skill development and active participation from employees, social partners and civil society.

Research on “Europe at work” is fragmented and barely visible in EU’s research programme Horizon 2020 - especially regarding the development of a sustainable and innovative work system. Sustainable work should be a focus area within the context of the need for regeneration of human, social, economic and ecological resources, and the strengthening of social cohesion. Sustainable work and sustainable quality jobs are not only restricted to the low-carbon dimension but to the quality of work in a broader context including consideration of workplace health promotion; work-life-balance; safety culture; flexible working places and times are more attractive for workers. HR potential and innovation is essential for competitiveness and growth of companies.

To highlight research on sustainable work, three areas of research in three different programs as well as one example of a cross-cutting issue have been chosen relating to Horizon’s programmes and other EU research funding, namely

- Novel technologies and sustainable work.
- Workplace health strategies for sustainable and inclusive growth.
- Sustainable work and an increasing work force diversity.
- Integrated health and safety concept for large infrastructure projects and new working environments

A stronger focus on research, development and innovations for sustainable work will promote sustainable development in a broader context. Sustainable work systems also have a key role for skill development and workplace learning. More generally, concentrating on sustainable work and sustainable employability over the life course is one of many ways to promote an *Innovation Union* in the context of clusters of learning organizations.