



How to guide

New competences and new skills brought by the technological change

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WHY READ THIS?

Digitalisation and automatization are changing the nature of work. These changes lead to qualitative and quantitative reallocations of employment and to a risk of weakening of certain groups of people in the labour market, in particular the less qualified.

In the first place, we are observing a general rise in the level of required skills. The industry is particularly concerned with the decline of low-skilled workers due to production and organizational changes (automation, digitalization, new methods and processes). It is not a general trend because we are also witnessing a shift towards "services" economy, which means a growing demand for low-skilled workers in some particular economic segments (cleaning services, security services, personal care services for instance).

In the second place, it is observed in several European countries, including France, an increase of the average level of education of the population (i.e. in the 80s more than half of the French population was without a degree; today: 1 out of 5) which leads to a general increase of the required degree to cover a particular job position.

In this guide we want to look in particular to those economic sectors that are facing losses of low qualified labour force. Likely, a part of these losses will be due to retirements and will be compensated with more qualified workers holding higher degrees. The starting assumption is that this phenomenon is largely due to the impact of new technologies. We have checked it with the help of stakeholders' representing the sectors of Metallurgy and Logistics and we have discovered a more complex reality which needs additional scrutiny considering territorial and economic sector specificities.

CHALLENGES AND NEEDS ADDRESSED BY THIS GUIDE

What are the expected Digitalisation effects on industry?

Mechanisation and automation is not so new in industry; since many years robots are used for assembling or welding tasks in the automobile industry for instance. What is changing with the advent of the Industry 4.0 is the appearance of concepts like the "connected factory", "remote machinery monitoring" or "predictive maintenance". These processes are linked with the incremented use of connected objects and big data treatments. It allows also to set new innovative forms of production organization such as extended forms of supply chains (integrating logistics and production), a stronger customer relationship



(customization of products, more flexible production lines where product's components are digitally tracked).

Industry 4.0 still lies today in a R&D phase carried out in companies' design offices by engineers and data scientists but once it will be implemented in industrial lines the required level of competences and skills is deemed to be not so high. For instance, the introduction of additive process in production by the extensive use of 3D printers will be not directly handled by engineers and we can expect that it will be rather the machining technician who will be brought to be operative on this type of machines, following prescribed protocols and respecting safety rules.

Does technological change induces a massive need of training and retraining of adult workers ?

Although ongoing digitalization and automatization of the production sector is stoking fears of job losses there are indicators that the overall effect on employment will be relatively slight (BIBB 2017). New technologies are going to be widely implemented but we are not in a process of radical change of labour organisation. The transformation of production processes is soft and progressive. More than whole automation, the majority of companies are shifting to *Cobotics* solutions aimed to reduce heavy/repetitive/dangerous tasks with reduced added value. However these technological improvements do not work without human intervention. Work is not deemed to disappear; it is just changing like society changes.

Nevertheless public authorities and governance bodies don't avoid to ask themselves how to support these changes and how to support the most disadvantaged categories of workers and job-seekers. As a matter of fact we know what are the jobs in tension (i.e. in industry: Electro-technic maintenance, welding for boiler making, electronics, production line control and maintenance) and we need to equip these workers with industry change requirements.

Develop local synergies among training institutes and enterprises in order to improve work-based learning

Recent studies on apprenticeship in France clearly show how the employment rates are sensibly higher for people having followed work-based training. All policy leverages are now directed for enlarging this public and making work-based learning as widespread as possible in particular for initial VET and including the lowest degrees of education. In a context of quick technological change this proximity between training and industry is the only logic solution in order to provide students with the up-to-date competences.

The tight cooperation between training institutes and company became helpful for stimulate the capacity to develop edge technologies and in the meantime providing students and workers with the fitting competences. How the different actors at territory level cooperate each other in order to develop apprenticeship? What kind of synergies are possible between State, local authorities, training providers and industry in order to set efficient apprenticeship infrastructures?

RECOMMENDATIONS

Some experience from the French context can help us to tackle the issue of low qualified people involvement in a more digitalized labour market

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In a context of uncertainty and strong technological change the way of sharing between actors is one of the center of the strategy. The collaboration between National Education and industrial branches organizations at territory level has to be intensified. In particular, the **constitution of joint technical platforms** dedicated to advanced technologies permits to share the efforts of research, training and new competences development, and last but not least, promote work based learning and apprenticeship. Many companies are at the starting phase of the development of new products and processes induced by digitalization. In some cases they have already bought expensive **innovative equipment** but there is still a gap between the potential of this new machinery and its actual use which penalizes the industrial gain that the machine could bring. In summary, is very beneficial to create a sort of **circularity of learning** for the benefit of all stakeholders sharing technical platform innovative machinery both in training centers and companies at the benefit of a plurality of actors: the youth in apprenticeship, the adult workers requiring re-training to new technologies and processes, the training of VET trainers.

The training system has to move toward more **longer work-based learning periods**. In France even in the case of school-based VET courses, training providers establish cooperation agreements with companies in order to provide work-based experiences to students, however, these periods are too short. Duration of the work-based training must be long enough to allow an effective knowledge and skills transfer to trainees. An ideal duration could be 22 weeks at least and, in any case, as much closer as possible to apprenticeship and dual training model where the balance between school-based and work-based training is generally equally distributed.

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The industry of the future is ahead of us, we can perceive it on the horizon but we still do not know which right path to take on for achieving it: what are the future skills to develop? By which means we will provide these new skills to youth and adult employees? To what extent we should adapt the existing certifications? In spite of the all these uncertainties, it shared opinion that the qualifications offer based on separate blocks of skills



should help to introduce elements of flexibility in the processes of acquisition of competences. The combined use of **validation of prior experience and the acquisition of partial qualifications** focused on some strategic competences required should help workers mobility on the labor market their competence update and professional reconversion. In France a process qualifications standards breakdown in smaller subunits of skills is underway, but the pitfalls to avoid are several: what is the relationship between these blocks of skills and the full certifications? The blocks of skills composing a full qualification should not become too much autonomous. Blocks should gain value on the labor market only if connected with a broader set of complementary competences or multiple blocks which lead altogether to a full qualification. Nevertheless, the establishment of a training market (particularly in the context of continuing learning) opens up to different and contrasting trends: the creation of partial or “short” qualifications for instance issued by sector skill councils or other private providers could contribute to erode the recognition of full qualifications on the labour market.

The acquisition of skill blocks presupposes that individuals have the ability to guide themselves in a world that is changing both in terms of training and jobs. What about supporting people in their efforts to obtain certification from the accumulation of several skill blocks? It is necessary to develop support and **guidance services** for people in their efforts to obtain additional blocks of competences and guiding them toward the acquisition of full qualifications.

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In an evolving and changing territorial context of trades and skills impacted by digital change, the **Regional Labour Market and Training Observatories** have become essential entities for the production of training-employment diagnostics in sub regional territories and economic sectors. They are legitimate forums for the production of knowledge, particularly statistics with strong links with the research community. They should be fully integrated in social dialogue between public and private sector players in the region and participate in policy making consultations.

BEST PRACTICES AND USEFUL LINKS

- **Constitution of joint technical platforms.**

The start of the **HR & Training Employment Platform** project based on a strong sharing of resources among the actors of the PACA region meets the challenges of technological change. It targets both young people in initial and dual education, job seekers, employees and even trainers. The project aims to train 1,500 people within 5 years and to develop about 30 new training courses.

Website (French language): <http://www.projet-henri-fabre.com/le-projet-henri-fabre-se-dote-dune-offre-de-formation-au-petit-point/>

- **Joint public-private network activity in the field of training and apprenticeship**

The Academy of Aix-Marseille (regional emanation of the Ministry of Education) established in 2014 the **Campus of Trades and Qualifications** whose activity is to make an inventory of existing training on the territory, identify the needs of companies develop a training offer with tailor-made training modules for the vocational workers starting from the baccalaureate. These specific modules "Industry of the future" are integrated into the initial training but also in continuing education in order to train employees throughout their lives.

Website (French language): <http://campusaeropaca.ac-aix-marseille.fr/>

- **Private branch apprenticeship schools**

The French Metallurgy branch (UIMM) has created several **centers for industrial apprenticeship** (CFAI) in the country. They bring together employment and training actors of a specific employment area and tackle the challenges of technological change. Among their main activities there the strong promotion work-based learning and apprenticeship for their learners. One of these centers is located in PACA regions, it is one of the most developed to date.

Website (French language): <http://www.formation-industries-paca.fr/>

- **Guidance**

In order to support **individuals guidance over continuing learning** offer and opportunities French regulations established a new dedicated professional profile: the counselor in career development (CEP). It is a free and personalized support system offered to anyone wishing to take stock of their professional situation and, if necessary, establish a career development project (reconversion, recovery or creation of activity). It is provided by advisers from authorized organizations.

Website (French language): <http://www.mon-cep.org/>

- **Regional Labour Market Observatories**



ORM PACA is a sound example of development of a local **Labour Market and Training Observatory** at the service of regional public action: studies and diagnostics producer, exchanges promoter, it favors partnerships between experts, institutional actors, researchers, contributes to the sharing of information and the dissemination of common expertise. Among their activities the setup of the MET@FOR web platform which distributes free synthetic information, reliable and accessible, to answer many questions, both training and trades present in PACA region and a thorough analysis on the “trades in tension”: the jobs which are deemed to be menaced by labour market transformation in terms of skills need, economy evolutions and of course technological transitions.

Websites (French language):

ORM PACA : <https://www.orm-paca.org/>

MET@FOR: <https://www.orm-metafor.org/>

- Jobs in tension: <https://www.orm-paca.org/Les-metiers-en-tension-structurelle-en-PACA-729>

BACKGROUND

This guide looks at how policymakers can work to encourage the recruitment of low skilled and disadvantaged groups into sectors anticipated to have considerable growth potential. This topic is one which has a profound local or regional dimension and will necessitate partnership working between the triple helix of employers, policymakers and educators and sometimes the inclusion of third sector/support organisations (quadruple helix). It inevitably impacts on economic development and education/skills policy and the closer that these are aligned (in policy terms) the better.

This ‘How To Guide’ includes information from the REPLAY-VET Erasmus+ Strategic Partnership activities and reports and combines this with information sourced via literature reviews and from the experience of the author, including his authoring of the Handbook: Tackling Long-Term Unemployment amongst Vulnerable Groups, which he (Dean, A. (2013), “Tackling Long-Term Unemployment Amongst Vulnerable Groups”, OECD Local Economic and Employment Development (LEED) Working Papers, 2013/11, OECD Publishing, Paris.) produced for the OECD in 2013.

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