

## ISSUE BRIEF

Prepared for the  
2nd Meeting of the Global Commission on the Future of Work  
15–17 February 2018

# 8

**Cluster 4: Managing change during every phase of education**

# Skills policies and systems for a future workforce

The establishment of the Global Commission on the Future of Work in August 2017 marked the start of the second phase of ILO's Future of Work Centenary initiative. The six thematic clusters provide a basis for further deliberations of the Global Commission. They focus on the main issues that need to be considered if the future of work is to be one that provides security, equality and prosperity. A series of Issue Briefs are prepared under each of the proposed clusters. These are intended to stimulate discussion on a select number of issues under the different themes. The thematic clusters are not necessarily related to the structure of the final report.

---

# LIST OF ISSUE BRIEFS

---

Cluster 1: The role of work for individuals and society

- #1. Individuals, work and society
- #2. Addressing the situation and aspirations of youth

Cluster 2: Bringing an end to pervasive global women's inequality in the workplace

- #3. Addressing care for inclusive labour markets and gender equality
- #4. Empowering women working in the informal economy

Cluster 3: Technology for social, environmental and economic development

- #5. Job quality in the platform economy
- #6. The impact of technology on the quality and quantity of jobs

Cluster 4: Managing change during every phase of education

- #7. Managing transitions over the life cycle
- #8. Skills policies and systems for a future workforce

Cluster 5: New approaches to growth and development

- #9. New business models for inclusive growth
- #10. Global value chains for an inclusive and sustainable future

Cluster 6: The future governance of work

- #11. New directions for the governance of work
- #12. Innovative approaches for ensuring universal social protection for the future of work

# Introduction

Alongside other determining factors, technological, climate and demographic change are thought to have profound and diverse impacts on the demand for skills (see Issue Briefs Nos 2, 6 and 10). The future of work will require a twofold adjustment of the skills development systems. First, these systems will need to deliver the foundational skills that allow people to embrace changing technological opportunities. And second, they will need to facilitate dynamic learning over the life cycle to ensure that people keep pace with digitalization and other factors of change.

This Issue Brief provides an overview of skills requirements for the future of work and considers how skills development systems might be transformed to meet these needs. It also raises questions about the financing of lifelong learning, as well as about the respective responsibilities of governments, enterprises and workers.

## Key findings

### What skills will the future of work require?

Technological change will affect both the composition of tasks (see Issue Brief No. 6) and the demand for skills (Arntz, Gregory and Zierahn, 2016; Autor and Handel, 2013). It is likely to have effects across all levels of skills and education (MGI, 2017; Freeman, 2014). Automation and robotization will increase the demand for technical skills that can facilitate problem-solving and innovation, particularly in occupations related to science, technology, engineering and mathematics (STEM). In addition to technical skills, specific vocational skills will be required to deploy, operate and maintain new technologies. In order to facilitate resilience to change and the adaptive capacity to continually improve skills over the life cycle, these cognitive skills will need to be complemented by a range of non-cognitive social and behavioural skills, which are often acquired in early childhood and at school (MGI, 2017). The appropriate combination of these technical, vocational and core work skills will be rewarded at a premium and will provide workers with sound future employment prospects, as they will be able to move easily between jobs, occupations and sectors. These trends are likely to exacerbate the disadvantages that low-skilled workers currently face on the labour market.

The transition towards an environmentally sustainable economy will generate new occupations, cause some job losses, and alter the skills composition of most jobs. Skills development strategies will need to both support displaced workers and facilitate the greening of the economy. New job opportunities in the “green economy” will emerge in the areas of renewable energy, energy efficiency, recycling, repair and remanufacturing (ILO, forthcoming (a)). These will require upgrading and making adjustments to existing competencies (for example, by adding training components on green technical solutions and environmental awareness to the curricula of architects, plumbers or electricians), as well as increasing specialization in certain technical skills (for example, STEM skills required for water and waste treatment). Green jobs will also require new skills

for occupations and sectors emerging in the green economy. Targeted training will allow workers to take advantage of these newly emerging green jobs (Strietska-Illina et al., 2011). Raising awareness about the need for environmental sustainability must become an integral part of education and training systems in order to pave the way for the acquisition of new skills.

Demographic change is likely to affect the skills requirements of the ageing labour force, as well as the skills needed to face the growing demand for caring professions (see Issue Brief No. 2). The workforce will be obliged to constantly upgrade its digital and technology-related skills to be able to remain longer in the labour market. At the same time, new opportunities for care work (see Issue Brief No. 3) will increase the demand for skills such as nursing and elderly care, as well as the accompanying soft skills such as communication and empathic listening. Other countries, especially emerging and developing countries, are facing the opposing trend of having an increased number of young people entering the labour market (see Issue Brief No. 2). Given that these highly competitive labour markets have a large number of equally qualified job applicants, soft (in particular interpersonal) skills might even become a decisive factor in an employer's decision to select a specific candidate.

These demographic trends will be accompanied by other changes in labour markets, affecting both the demand for and supply of skills. Between 2010 and 2030, 60 per cent of the increase in the global workforce will occur in developing countries, in particular, Africa and southern Asia – regions where educational attainment is lagging behind (MGI, 2015). In sub-Saharan Africa and South Asia, these demographic changes, combined with unequal access to education, are causing a skills mismatch with a surplus of low-skilled workers and a shortage of medium-skilled workers (MGI, 2015). At the same time, there is an increasing demand for high-skilled workers in developed countries, leading to emigration from and causing a brain drain in developing countries. The difficulties of finding a job in developing countries are likely to increase the pressure to migrate in search of work (see Issue Brief No. 2).

## **What does this mean for skills development strategies and education systems?**

Given the constant and accelerating pace of change, skills development strategies will be obliged to ensure the continual renewal of skills over the life cycle. This will require focusing on ways to manage the different transitions that individuals will face (for example, moving from the informal to the formal economy or from the manufacturing to the services sector), so that they successfully enter the labour market (i.e. the school-to-work transition) and interrupt, reskill and re-engage in employment throughout their careers (see Issue Brief No. 7). The role of basic education in providing the foundational skills needed for dynamic further learning will remain important. This life-cycle approach raises fundamental questions about the respective responsibilities of governments, workers and enterprises in making choices about when and how to reskill and retrain. Moreover, it requires a solid financing concept – and in particular a decision about the sources of the necessary funding. In this context, it is equally relevant to consider the appropriate mix of public and private investment in all phases of delivery.

## ***Basic education remains the foundation for future employability and further learning***

Ensuring inclusive and quality education for all, as outlined in Goal 4 of the 2030 Agenda for Sustainable Development, as well as early childhood pre-school education and universal compulsory education, lays the foundation for lifelong learning, social mobility and social inclusiveness. Participation in education and levels of educational attainment have been rising globally, resulting in higher literacy levels and a better-educated workforce. Young people tend to stay longer in initial education. Mean years of schooling have doubled since the early 1980s (UNESCO, 2015), and projections show that the number of people achieving secondary education or higher will increase tenfold by 2100 (Roser and Ortiz-Ospina, 2017). However, low-income economies are still lagging behind, as they continue to face challenges regarding access to and dropout from basic education. The average length of schooling in developing countries, for instance, is only around 7.2 years, compared to 11.3 years in advanced countries (Barro and Lee, 2013). Although gender inequality in education declined considerably over the past decades, the ratio of female to male average length of schooling is still significantly lower in developing countries (85.9 per cent) than in advanced countries (97.8 per cent). Unless these economies make strides in access to universal basic education as well as improve its quality for both women and men, sustainable development will remain out of reach.

## ***Facilitating the school-to-work transition***

Having a solid qualification substantially enhances the employability of young people. However, to adjust to changing labour market demands, it will be necessary to strengthen the relevance of technical and vocational education and training (TVET), for instance by broadening the qualification profiles and integrating core work skills into the curricula. Such measures will not only improve the employability of youth (see Issue Brief No. 2), but also increase the potential for further upgrading initial qualifications.

Employers have a key role to play in workplace learning and Quality Apprenticeship training. On-the-job training and experience can help ensure that young people are equipped with the relevant skills and that they are exposed to the use of new technologies (ILO, 2017b). Employers need to be engaged more actively in the provision of training, especially in TVET. Tripartite sectoral skills bodies provide important opportunities for facilitating the school-to-work transition, as well as the delivery of relevant training to the current and future workforce.

Dual apprenticeship systems are another tried and tested way of enabling young people to make the transition from the world of education to the world of work. They play a key role in enhancing youth employability by helping young people acquire the relevant skills while simultaneously having the opportunity to gain work experience and start the process of building a career. The set-up and adjustment of such systems will continue to require effort on the part of governments, employers' associations, trade unions and training providers (ILO, 2017b).

As mentioned above, digital technologies not only change the characteristics of jobs but can also facilitate the access to skills and learning opportunities. For instance, Massive Open Online Courses (MOOCs) and training video resources appear to be well suited to respond to the need of renewing competencies by overcoming time and resource constraints and opening up access to training, including for people in remote areas and people with disabilities. To reach the full potential of e-learning opportunities, access to online courses should be accompanied by certification and linking to other types of training.

### ***The future of work will require lifelong learning and agile, flexible training systems***

The frontloading of skills through initial training for a single lifetime qualification will no longer be sufficient or effective. Training systems of the future must be flexible and prepare the workforce to continue learning over the life cycle. They will need to be closely aligned with the labour market in order to forecast future skills demands – including those required by emerging occupations – and to match them with current skills development and training opportunities. Employment services will be obliged to collaborate with employers to provide effective assistance to workers, matching skills and jobs and facilitating job-specific (re)training.

The concept of lifelong learning developed in the 1970s, having originated in the context of the transition to the knowledge economy. At first, flexible modular training programmes, combined with the recognition of training credits, were considered to be an optimal solution. This approach gave way to an even more flexible system of learning outcomes, which defines results (e.g. competency standards) rather than inputs. However, this approach has suffered from lengthy standards elaboration and accreditation procedures, as well as complex quality assurance systems. Striking the balance between flexible training offers and systematic quality assurance with accreditation and testing mechanisms can be a challenge. Meeting this challenge will be even more crucial for a future of work that demands agile and flexible training systems.

The ability to take advantage of the opportunities presented in the future world of work will be contingent upon the effective design of these lifelong learning systems. Governments might consider taking the lead in designing modern lifelong learning systems in close consultation with workers and employers – the actors and key beneficiaries of the system.

### ***Need for increased and diversified funding of lifelong learning***

At a time when millions of individuals require new skills to earn a living, there are worrying signs of possible cuts in public spending on workforce training programmes (for the OECD countries, see OECD (2018) and MGI (2017)). Governments play a central part in financing active labour market policies and providing basic skills through initial education. Their role will need to become more pronounced in the context of lifelong learning. At a time when employer–employee contractual relations are evolving and diversifying, and job tenures tend to be shorter, individuals may need additional support to be able to engage in learning. Public funding can support and incentivize access to learning opportunities, through such vehicles as voucher financing models, entitlements, skills guarantees, individual learning accounts, subsidies, grants, credits and tax breaks. However, scarcity of public resources, especially in developing countries, calls for a diversification of funding sources and continued support through development cooperation. Mechanisms that require employers to contribute to workforce training, such as sectoral levies or national tax breaks, are possible channels for engaging the private sector in training provision and participation.

Persons on study leave to upgrade their skills, or workers who are temporarily unemployed and in transition from one job to another, will continue to require financial support (WEF and BCG, 2018). A combination of retraining with passive labour market measures may help to ensure income security for individuals during these periods (see Issue Brief No. 7). Easing the burden on public funding can be achieved by striking a better balance between public and private responsibility for financing training (see Issue Brief No. 9).



### ***Better utilization and recognition of skills for inclusive labour markets***

The effective utilization of skills requires well-functioning and accessible systems of recognition of skills, as well as prior learning at national, sectoral and workplace levels. Skills strategies that take account of the private sector's need to remain competitive are likely to garner stronger support from enterprises. National and sectoral tripartite social dialogue on skills policies can be an important way to develop and improve policies, and to enhance their take-up.

Migrant workers find it extremely difficult to have their skills and experience recognized (ILO, 2017a), which results in a significant level of skills-related underemployment and a loss of economic benefits for these workers. A growing emphasis on the validation and recognition of skills has led to an expansion of bilateral and regional mutual recognition arrangements, which are based on learning outcomes and often linked to national and regional qualification frameworks.

## **Some considerations**

As the pace of change accelerates, the capacity of systems to anticipate future skills needs – locally as well as globally – will be placed under considerable pressure, requiring innovative solutions (ILO, 2015b). Skills development can be an important enabler of transition and can help to reduce social costs. Lifelong learning has emerged as an important concept for developing approaches to educational and skills development systems throughout the life cycle. Yet key questions remain about design and delivery.

- How do education and training systems need to be transformed to equip the workforce with the skills and competencies required in the future?
- How do we design and finance lifelong learning systems? What are the respective roles of governments and the social partners?
- How can governments overcome the challenge to increase public expenditure against a background of scarce resources, in particular in developing countries?
- What incentives might be used to encourage the provision of and participation in training opportunities – and who should pay for them?
- What policy measures are needed to enhance links between training institutions and enterprises?
- How do we strike a balance between ensuring quality of training and meeting the demand for more flexible and shorter learning pathways?
- What role can international labour standards play in shaping policies for lifelong learning?

# Bibliography

- Arntz, M.; Gregory, T.; Zierahn, U. 2016. *The risk of automation for jobs in OECD countries: A comparative analysis*, OECD Social, Employment and Migration Working Paper No. 189 (Paris, OECD).
- Autor, D.H.; Handel, M.J. 2013. "Putting tasks to the test: Human capital, job tasks, and wages", in *Journal of Labor Economics*, Vol. 31, No. 2, pp. S59-S96.
- Barro, R.J.; Lee, J.W., 2013. "A new data set of educational attainment in the world, 1950-2010", in *Journal of Development Economics*, Vol. 104, Sep., pp.184–198.
- Boston Consulting Group (BCG). 2014. *The global workforce crisis: \$10 trillion at risk* (Boston, MA).
- Bessen, J. 2015. *Learning by doing: The real connection between innovation, wages, and wealth* (New Haven and London, Yale University Press).
- Brewer, L. 2013. *Enhancing youth employability: What? Why? and How? Guide to core work skills* (Geneva, ILO).
- Brown, P.; Lauder, H.; Ashton D. 2011. *The global auction: The broken promises of education, jobs and incomes* (Oxford and New York, Oxford University Press).
- Chang, J.-H.; Huynh, P. 2016. *ASEAN in transformation: The future of jobs at risk of automation*, Bureau for Employers' Activities Working Paper No. 9 (Bangkok, ILO Regional Office).
- Freeman, R.B. 2014. "Who owns the robots rules the world", in *IZA World of Labor*, No. 5, May.
- Frey, C.B.; Osborne, M.A. 2013. *The future of employment: How susceptible are jobs to computerization?*, Working paper, Oxford Martin Programme on Technology and Employment (Oxford, University of Oxford).
- International Labour Office (ILO). 2015a. *World Employment Social Outlook: Trends 2015* (Geneva).
- . 2015b. *Global estimates of migrant workers and migrant domestic workers: Results and methodology* (Geneva).
- . 2015c. *Anticipating and matching skills and jobs*, guidance note, Employment Policy Department (Geneva).
- . 2016a. *New automation technologies and job creation and destruction dynamics*, Employment Policy Brief, Employment Policy Department (Geneva).
- . 2016b. *Non-standard employment around the world: Understanding challenges, shaping prospects* (Geneva).
- . 2017a. *How to facilitate the recognition of skills of migrant workers: Guide for employment services providers* (Geneva).
- . 2017b. *ILO toolkit for quality apprenticeships: Vol. 1: Guide for policy makers*, Employment Policy Department (Geneva).
- . Forthcoming (a). *World Employment and Social Outlook: Greening with jobs* (Geneva).
- . Forthcoming (b). *Skills and jobs mismatches in low- and middle-income countries* (Geneva).
- ; World Trade Organization (WTO). 2017. *Investing in skills for inclusive trade*, joint study by the ILO and WTO (Geneva).
- Loshkareva, E.; Luksha, P.; Ninenko, I.; Smagin, I.; Sudakov, D. 2017. *Skills of the future: How to thrive in the complex new world* (Moscow and Amsterdam, Global Education Futures and World Skills Russia).
- McKinsey Global Institute (MGI). 2015. *A labour market that works: Connecting talent with opportunity in the digital age* (Brussels, San Francisco and Shanghai).



—. 2017. *Jobs lost, jobs gained: Workforce transitions in a time of automation* (Brussels, San Francisco and Shanghai).

Nübler, I. 2016. *New technologies: A jobless future or golden age of job creation?* Research Department Working Paper No. 13 (Geneva, ILO).

Organisation for Economic Co-operation and Development (OECD). 2016. *Automation and independent work in a digital economy*, Policy Brief on the Future of Work, May (Paris).

—. 2018. *Public spending on labour markets: Indicators*, OECD Data. Available at: <https://data.oecd.org/socialexp/public-spending-on-labour-markets.htm> [6 Feb. 2018].

Roser, M.; Ortiz-Ospina, E. 2017. *Global rise of education* (Our World in Data (OWID)).

Senge, P.M. 1990. *The fifth discipline: The art and practice of the learning organization* (Doubleday and Currency).

Sparreboom, T.; Tarvid, A. 2017. *Skills mismatch of natives and immigrants in Europe*, Conditions of Work and Equality Department (Geneva, ILO).

Strietska-Ilina, O.; Hofmann, C.; Durán Haro, M.; Jeon, S. 2011. *Skills for green jobs: A global view*, Synthesis report based on 21 country studies (Geneva, ILO).

United Nations Educational, Scientific and Cultural Organization (UNESCO). 2015. *Database of education statistics* (Paris). Available at: <http://data.uis.unesco.org/>.

World Economic Forum (WEF). 2016. *The future of jobs: Employment, skills and workforce strategy for the fourth industrial revolution*, Global Challenge Insight Report (Geneva).

—; The Boston Consulting Group (BCG). 2018. *Towards a reskilling revolution: A future of jobs for all* (Geneva).

World Bank. *Enterprise Survey*, database, 2006–17. Available at: <http://www.enterprisesurveys.org/> [24 January 2018].

—. 2016. *World Development Report 2016: Digital dividends* (Washington, DC).

