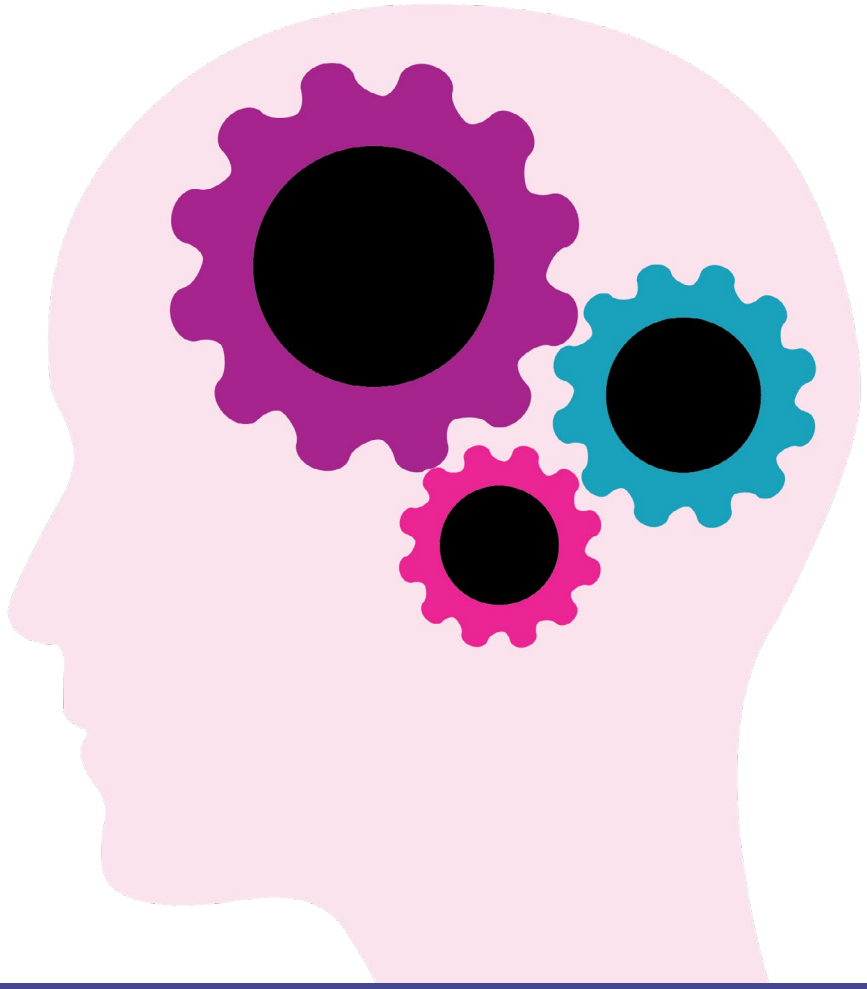
WFCP
World Federation of Colleges and Polytechnics

ANALYTIC LEARNING
RESEARCH, INSIGHT & POLICY FOR GLOBAL EDUCATION & SKILLS

Skills for the Future

Navigating the labour market impacts of automation, greening, and demographic change



A GLOBAL STATEMENT
by the World Federation of Colleges and Polytechnics

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ABOUT WFCP

The World Federation of Colleges and Polytechnics (WFCP) is a vibrant global network that brings together TVET colleges and polytechnics, along with the national and regional associations that represent them, to advance excellence, innovation, and sustainability in professional and technical education and training.

WFCP aims to be the global influencer and leading reference for TVET excellence, setting the benchmark through internationally recognized awards, thought leadership, accreditation, and impactful outreach. We champion the Sustainable Development Goals and amplify members' impact through global events, research, professional development, and recognition initiatives such as the WFCP Congress and Awards of Excellence.

WFCP helps members connect with key stakeholders across the skills ecosystem, including employers, industry, governments, and funding agencies, to share leading-edge education strategies and best practices. By strengthening these connections and accelerating peer learning, WFCP supports members to improve workforce employability outcomes and drive positive change in communities worldwide, grounded in respect, integrity, inclusion, and collaboration.



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METHODOLOGY

This report draws on:

- A horizon scan exercise, designed to identify key trends likely to impact TVET in the next 5-10 years
- A literature review
- Four regional focus groups, exploring how institutions are responding to changes in skills demand
- Two workshops with members of WFCP's Board of Directors
- Written submissions from FPEmpresa - Asociación de Centros de Formación Profesional (Spain) and School Centre Kranj (Slovenia)

Recommendations were developed based on insights from the research, and workshop / focus group discussions.

FOREWORD

One of the things I value most about WFCP is the opportunity for colleagues around the world to learn from one another. In developing this Global Statement, our members shared how they are helping people prepare for changes in the way we work, from the adoption of AI to the transition to a greener economy and shifts in the workforce.

Their experience shows what colleges and polytechnics can offer. They work with local employers to develop training that keeps pace with industry. They help businesses put new technologies to use. And they give people a way back into learning at different points in their working lives.

At WFCP, we believe technical and vocational education and training should be at the heart of skills policy. With sustained investment and the flexibility to respond to local needs, colleges and polytechnics can open up these opportunities to more people.

I'm grateful to the members who shared their experience with us. I hope this statement helps governments, employers and education leaders consider what more we can do together to make lifelong learning a practical option for everyone.



Dawn Ward
Chair, WFCP



EXECUTIVE SUMMARY

There are likely to be significant shifts in labour markets in the next 5 to 10 years, driven by three megatrends: AI & other technologies leading to more automation of work; the green transition; the workforce dynamics of demographic change.

The scale of upskilling and reskilling likely to be required in response to these labour market trends is significant. A fundamental shift in education and training systems is required to provide citizens with opportunities to develop skills and competencies throughout their working lives.

TVET institutions play three key roles in supporting learners to gain the skills and competencies they will need to adapt and thrive, through providing (1) Initial TVET, (2) Lifelong Learning, and (3) Retraining. TVET institutions also play an important yet under-appreciated role as Agents of Innovation, supporting businesses to adopt new technologies and develop new products, processes and services

To respond to expected shifts in labour markets in the next 5 to 10 years, **TVET institutions will need to:**

- Provide more flexible opportunities for training – including delivery outside of normal working hours, blended and online courses, and short courses
- Deepen engagement with employers to ensure training maintains labour market relevance
- Ensure learners have opportunities to develop the core / transferable and foundational skills (including numeracy, literacy, digital) they will need to adapt to labour market demands
- Revise curricula to take account of technological developments – including giving all learners a basic critical understanding of AI
- Adapt in order to be able to serve the needs of an even more diverse set of learners

Governments will need to:

- Ensure TVET institutions have the level of financial resources required to deliver initial TVET, lifelong learning and retraining at scale. This could include exploring mechanisms to capture some of the financial value businesses gain from automation of work to contribute towards the costs of retraining.
- Enhance workforce resilience and preparedness for labour market disruption through giving citizens access to funds to support lifelong learning and re-training.
- Give TVET institutions greater flexibility in funding, regulation, curriculum, accreditation and assessment, to enable them to deliver against education and training that better aligns with economic need and learner demand. TVET institutions should be judged principally on the extent to which they support learners to achieve their intended outcomes.
- Work in partnership with TVET institutions and other organisations to develop a clear vision and plan for building a lifelong learning and retraining system in their country. This could include:
    - Establishing and scaling up partnerships with employers, trade unions, and community organisations to reach target groups of prospective learners
    - Increasing awareness of opportunities for training (and the potential benefits and labour market returns) through public awareness campaigns, or through support for careers guidance
    - Concerted policy action to overcome some of the wider barriers to learning, and barriers to employment that disadvantaged groups face.
- Build labour market information infrastructure that TVET institutions can use to inform decisions about their education training offer, and learners can use to make informed career decisions.
- Take steps to speed up qualification development and update processes to ensure that TVET curricula reflect important developments in technology and industry practice.





What trends will shape TVET in the next 5 to 10 years?

A horizon scan conducted during the first stage of development of this Global Statement suggests that three mega-trends will have profound effects on TVET globally over the next five to ten years. These mega-trends are:

01. AI & OTHER TECHNOLOGIES LEADING TO MORE AUTOMATION OF WORK;

02. THE GREEN TRANSITION; AND

03. THE WORKFORCE DYNAMICS OF DEMOGRAPHIC CHANGE.

Other potential, albeit more uncertain, trends identified during the horizon scan included increased geopolitical instability (which may change the geography of where industry is located), growth in non-traditional forms of employment, increased migration, and disruption of the landscape of learning provision.

Technology and the Automation of Work

Technological developments, in particular, greater adoption of Artificial Intelligence technologies, are likely the biggest labour market trend TVET institutions will have to navigate.

Developments in AI are likely to cause a mix of job displacement (where AI technologies are able to do the tasks previously undertaken by a human, leading to those jobs being eliminated); job creation (where technology creates demand for new tasks); and job augmentation (where jobs are re-designed to integrate technology into tasks, or to refocus on tasks that the technology cannot do or that require judgement or additional contextual understanding). Augmentation of jobs could be positive for workers (through automating peripheral repetitive tasks, for example) or negative (through reducing the discretion they have at work, or intensifying roles).[1]

However, there is considerable uncertainty around the likely extent and timeframe for AI-driven labour market change.[2] There are diverging views on the capabilities that technologies will have, uncertainty around the pace at which firms will adopt technologies, and a considerable range of potential societal responses to the opportunities and challenges AI poses.

Adoption of technology is a socio-political matter rather than a technical inevitability – it will be shaped by governments, citizens, consumers, and workers themselves. Governments and regulators may act to restrict what can be automated and how. Distrust of AI among the general public may impact demand.[3] Businesses with AI-exposed products and services, in industries such as audit, are likely to adapt in an attempt to maintain revenue. It is also important not to under-estimate the challenges and costs that employers will face in adopting AI.[4] There is already a sizable gap between the theoretical use cases claimed by providers of frontier AI models and actual observed use. [5] A study by the European Training Foundation suggests that "availability of necessary skills for implementation and exploitation of new technologies" is a key limiter on adoption. [6]

Labour market impacts are likely to be uneven, with advanced economies, with more AI exposure, seeing greater workforce disruption.[7] AI-driven automation is likely to impact higher-skilled jobs previously untouched by automation, [8] and automation may take place more rapidly than in previous waves of technology driven labour market change.[9]

In the longer term, scenarios developed by the EU skills agency CEDEFOP range from workers being liberated from routine tasks and able to pursue "pursue purpose-driven careers" to AI technologies "displacing most human jobs, forcing workers to compete with machines for a dwindling number of positions"[10]

Potential implications of this AI and automation for TVET providers include: [11]

- Increased demand for digital skills and digital literacy, across many industries as firms integrate digital solutions into their ways of working
- Increased demand for workers with specialist occupational / technical skills in areas such as data science and cybersecurity
- Increased importance of transferable skills to enable workers to manage transitions
- Increased demand for trained workers in growth sectors such as technology, minerals and construction, the sectors required for the production of compute hardware

- Increased demand for re-skilling to enable at-risk workers to transition to new or
- changed occupations; and up-skilling and cross-skilling to support workers in AI-augmented jobs to meet to new occupational requirements
- A requirement to train some learners for new occupations

The Green Transition

In many countries, efforts to reduce carbon emissions in order to limit global warming is likely to significantly impact industrial practice, and consequently demand for skills.

"Greening" of industry is likely to lead to: [12]

- ✓ Increased demand for trained workers in existing occupations in green growth sectors, without significant change to the tasks these occupations involve.
- ✓ Greening of existing occupations, often requiring workers to develop enhanced skills, and which may consequently require the updating of the content of TVET courses, and delivery of upskilling interventions to the existing workforce.
- ✓ In a small number of cases, a requirement to train some learners for new and emerging occupations, often at high or medium skill levels. This will likely require new course development. Examples of new occupations include solar panel installers, energy auditors and wind turbine operators. [13]

Overall, the ILO projects that net impact on jobs will be positive, with more jobs being created than lost. [14] However, to support the transformation of industry that the green transition will entail, "extensive investment in workforce training" will be required. [15] Workers in carbon-intensive industries are likely to see the biggest shifts, with a significant likelihood that they will have to upskill or reskill in order to transition to new or changed occupations.

Demographic Change

The demographic profile of many countries will also have a significant impact on their future workforce. Many countries in the Global North have an aging population and a declining working-age population. This shrinking workforce challenge is compounded by lower levels of labour market participation by some groups of the population – including women (who are often balancing caring responsibilities), older people, and young people. In several OECD countries more than 15% of young people are NEET (not in education, employment or training). [16] The demographic challenge creates a new imperative to close these gaps in the employment rate. In these countries, TVET providers may need to consider carefully whether their provision (and wrap-around support on offer) would benefit from adaptation to better serve the needs of NEET young people, women and older learners.

By contrast, many countries in the Global South have a youth bulge, a large and increasing number of young people in the population. In these countries, there is an imperative to support development of sustainable livelihood options for young people leaving the education system. In many countries in Africa, for example, job creation in formal economies is not keeping pace with the increase in population, requiring the vast majority of young people to accept informal, low paid jobs that lack social protection, stable income and career development opportunities. [17] Women are again much more likely to be outside of the labour market.

The different demographic profiles will have an impact on patterns of employment growth and contraction. Global North countries will see an increase in demand in health and care professions to

support the aging population, whilst in the Global South there is likely to be growth in education-related professions.[18]

Looking across these trends, four observations can be made. Firstly, the scale of skills development likely to be required is significant. Indeed, the World Economic Forum notes that: "if the world's workforce was made up of 100 people, 59 would need training by 2030."[19] Secondly, both automation and greening are likely to increase the need for workers to reskill or upskill. Countries will need to ensure their education and training systems are set-up to provide this. Thirdly, there is additional uncertainty around how the implications of the mega-trends interact. For example, in Global North countries to what extent does automation of work counter-act the labour market impact of a demographics-driven shrinking workforce? Finally, adaptability and resilience of workers will be crucial.[20] Initial TVET must give learners the opportunity to develop the transferable skills necessary to navigate future labour market transitions.



TVET's role in navigating labour market challenges

TVET is a key tool that governments have for supporting their citizens to navigate these trends. TVET providers support learners to gain the skills and competencies they will need to adapt to labour market challenges in three ways.

INITIAL TVET	LIFELONG LEARNING	RETRAINING
Supporting the development of tomorrow's workforce through providing learners with opportunities to develop skills, competencies and credentials for a particular occupation. Initial TVET is typically undertaken before learners begin their working lives,[21] and should also give learners a strong foundation for dealing with the challenges and emerging opportunities they are likely to face during their careers.	Providing all adults with opportunities to gain new skills, competencies and credentials throughout their working lives. This supports learners to adapt to changes in the labour market, reducing the likelihood that their skills lose labour market value.	Providing targeted opportunities to develop new skills, competencies and credentials to learners whose existing skills are losing labour market value, and whose jobs may be at risk.[22]

TVET institutions also play an additional (but often little understood) role in supporting businesses and other organizations to innovate.

AGENTS OF INNOVATION
Innovation support activity can involve provision of training, consultancy, applied research, and certification of competencies.[23] WFCP's first Global Statement highlighted that the work of TVET institutions is particularly relevant to business process innovation and product innovation.[24]

How should TVET institutions respond to these trends?

01. More flexible models of delivering education and training

Leaders of TVET institutions participating in our focus groups recognised that the growing importance of lifelong learning and retraining would require them to offer learning in more flexible ways to serve learners who need to balance training with other responsibilities such as employment or care.

They envisaged that this would require:

- More delivery of training at evenings and weekends, outside of working hours
- Making more use of technology to offer blended/hybrid and online/fully remote courses
- Offering short courses that learners can immediately apply in their day-to-day work
- Offering courses using modular delivery models that allow learning to be undertaken over longer periods of time

Participants were cognisant that additional resources may be needed to put in place the workforce and capacity required to deliver out-of-hours provision. There was also recognition that, for some learners, face-to-face teaching would remain important to give structure and extrinsic motivation.

"For many adults, upskilling has to fit around full-time employment, mortgages and family and financial commitments. People in the middle of their careers cannot simply step away from work for six months or a year to study full-time."

Capital City College, United Kingdom

"Demand is coming in outside of traditional work hours and so our arrangements are evolving accordingly."

– TAFE Directors Australia

"We need to embark on short-term programs that are demand-driven based on societal gaps. We see that gaps are not only found in youth, but also those that have gone through the TVET system. Short courses can bridge that gap."

- Harare Polytechnic, Zimbabwe

02. Deeper employer engagement

At national level employers should be fully engaged in skills systems, through engagement in the bodies and fora that steward and govern the skills system; inputting into development of national occupational standards; and financing of skills provision. Here, however, we focus primarily on what deep and effective employer engagement and partnership could look like at institutional level.

PROMISING INSTITUTIONAL APPROACHES IN COLLABORATION WITH EMPLOYERS

Participants in our focus groups highlighted the importance of developing deep relationships with employers to ensure that training is relevant. Partnerships with employers can also help ensure that learners (especially those in Initial TVET) are better prepared for transitions into the workplace.

Successful institutional-level approaches highlighted by focus group participants included:

- **Giving learners direct experience of working with employers through internships and work experience, or through work-integrated learning.** One participant highlighted that their use of the 'dual vocational' model of training sees courses co-designed with industry experts, with learners' alternating semesters between school-based learning and direct workplace training. Other institutions reported embedding real-world projects, co-developed with employers, into the curriculum.
- **Collaborating with guilds or professional bodies on course design.** At Hong Kong Metropolitan University, a screenwriting course has been developed in collaboration with the Hong Kong Screenwriters' Guild. The course is taught by working screenwriters, with the course content based on the professional competency standards required for employment. This approach is also common in many regulated professions, where courses are required to be validated by professional or regulatory bodies.
- **Connecting learners with experienced employer experts to build learner understanding of industry trends.** At Capital City College in England, learners on the Diploma in Garment Technology for Fashion Retail are given opportunities to engage closely with employers to gain first-hand insight into the fashion retail sector and the end-to-end product development process. This has included receiving advice from a modelling agency on curation of their final collections and undertaking organised store visits to understand complete retail journeys. Meanwhile, a partnership with an organisation based at Pinewood Studios, a major film and TV studio, has seen learners studying towards a Professional Diploma in Costume Design meanwhile take part in specialist masterclasses delivered by experienced costume professionals. TVET institutions in other countries engaging with employers in this way valued the opportunity for learners to hear directly from professionals on "how the industry really is", and saw this as a way to "keep pace with evolving technological changes within the industry."
- **Embedding employers into programme design and governance**. At Hudson Valley Community College, for example, advisory councils, comprised of people from business and industry, regularly look at programmes to see if the training provided is aligned with what is needed now. The College also relies heavily on input from business and industry when developing new programs. This is seen as essential though takes significant effort to co-ordinate.





"We are working more closely than ever with business and industry to make sure that our academic programs are truly aligned with what's going on in the workplace"

– Hudson Valley Community College, United States

Nevertheless, employer engagement can be challenging. In several countries, colleges reported difficulty in sourcing a sufficient number of internships or industry placements for their learners. Development of links with employers, management of placements, co-ordination across organisations, and provision of support to SME and micro-SME employer hosts all take time and resources. Additionally, smaller companies are much less likely to have the bandwidth and incentives to engage in these processes.





BENEFITS OF PARTNERSHIPS WITH EMPLOYERS

Partnerships between TVET and employers are often also hugely beneficial for employers, with colleges often able to offer provision tailored to their needs.

- In Zimbabwe, Harare Polytechnic is working directly with major companies to develop a number of training programmes that will feed into their operations in areas such as mining operations as well as metallurgical assaying and mechatronics. The collaborations recognise that it is desirable to have the capacity and capability in-country to be able to effectively use and maintain imported technology.
- In Slovenia, School Centre Kranj has developed tailor-made training programmes responding to specific employer needs in areas such as new technologies, digital skills, and workforce development. The Centre cooperated with the technology company Iskraemeco to develop a School of Technical Skills, offering modules that were designed specifically around the company's competence needs. Modules are adapted, where possible, so that the acquired knowledge can be recognised within publicly recognised formal education programmes. In this way, the training not only responds to the company's immediate skills needs, but can also encourage employees to continue their education and work towards a higher level of qualification. Such partnerships are perceived as win-win - companies gain training tailored to their workforce needs, while the TVET institution gains valuable insight into current industry practices and competence requirements.
- In Australia, Holmesglen Institute of TAFE was able to very quickly deliver training and occupational licenses for companies contracted to build rail and road infrastructure.
- In China, Taishan Polytechnic has established multiple deep partnerships with leading Chinese companies. Partnerships see enterprises provide real equipment, process cases, and industry mentors, whilst the college provides teaching facilities, faculty, and research capabilities. Collaborations include an ICT Academy with Huawei, a New Energy Modern Industry College with Weichai Power, and an Artificial Intelligence College with Jiahuan Technology. The ICT Academy has seen company staff join college faculty in contributing to teaching, programme planning, textbook development, instructional design, and skills competitions, enabling students to transition seamlessly from campus training to future workplace performance.

CASE STUDY: DEEPENING EMPLOYER ENGAGEMENT

FE Innovation Fund

The Further Education Innovation Fund (FEIF) in the UK provided funding for colleges to engage with their local business communities either in a regional consortium model or at individual college level. The funding allowed the colleges involved to work on industry-focused innovation projects, partnering with local firms to co-develop new products, processes or digital tools resulting in improved growth and productivity.

The pilot projects resulted in stronger employer engagement with relationships between colleges and employers becoming less transactional and more relational, as well as engaging with those businesses that had never previously worked with FE colleges. It also supported capacity building as colleges were able to develop new internal capabilities in project management, applied research and industry collaboration. Early evidence showed improved innovation activity in underserved regions, supporting the UK's wider goal of economic growth.

FEIF demonstrated that FE college can play a strategic role in local innovation systems, not just workforce training. This is significant as SMEs – especially those outside major cities – often lack access to universities or R&D centres.

Opportunity-Driven TVET

Opportunity Driven TVET sees the reverse engineering of VET provision to meet the skills requirements of anticipated public or private investments. Approaches typically start by identifying concrete employment opportunities that are likely to arise through investment or sector development; identifying skills gaps in the relevant locality; and then developing skilling interventions designed to fill those gaps, often in partnership with the partners providing investment. Developing Opportunity-Driven TVET programmes often requires TVET providers to flex their existing provision, and their ways of working. The European Commission is currently supporting governments across Africa to deliver opportunity-driven TVET provision linked to investments made through its €400m Global Gateway infrastructure investment initiative. [25]

03. Skills requirements and curriculum updating

Workshop participants and the insights from the evidence review both highlight a need to ensure that TVET curricula support learners to thrive in the labour markets they'll be entering.

Several studies highlight rapid change in the skills being demanded. Analysis by the International Monetary Fund finds that a twentieth of advertised vacancies in emerging economies requires at least one new skill, rising to a tenth in advanced economies. Demand for these "new skills" is particularly pronounced in professional, technical and managerial occupations.[26] Similarly, skills clustering analysis by the Institute for the Future of Work finds that "skills demand is evolving quickly, with many new emerging skills gaining importance and others disappearing" [27]. Generally, many of the changes being observed in occupations require workers to have a higher level of skills.[28]

To navigate future labour markets, learners are likely to need a combination of technical, foundational and transferable skills. The precise mix of technical and occupational skills that are likely to be in demand will vary across countries.





FOUNDATIONAL SKILLS

These include numeracy, literacy, and digital skills. For many jobs, basic digital skills are increasingly an essential prerequisite. Yet, the most recent World Bank assessment found that less than 5% of the population in low-income countries had basic digital skills. The equivalent percentage elsewhere was 21% in lower-middle-income countries (LMICs), 38% in upper-middle-income-countries, and 66% in high-income countries. Less than 15% of the population in LMICs have the intermediate digital skills that are often required for integration of AI tools into professional activities, compared to 57% in high income countries.[29]

Interestingly, the demand for advanced digital skills globally actually fell between 2022 and 2025. This was attributed to companies resizing after digital hiring spurts during the COVD-19 pandemic and diversion of labour spend into AI capital.[30]

TRANSFERABLE SKILLS

The literature on responding to both automation and the green transition highlight the importance of transferable skills such as communication, problem solving, teamwork, collaboration, and creativity. These are described using a multitude of different terms, including core skills, transversal skills or soft skills.

In the context of automation, for example, the ILO highlights that workers in roles that have been augmented by use of AI systems will need a blend of technical skills and so-called 'human-centric skills' such as creative thinking and external communication.[31] The National Foundation for Educational Research highlights communication; collaboration; problem solving and decision making; creative thinking; and organising, planning and prioritising; alongside information literacy as being the "Essential Employment Skills that are needed for "jobs in a technology-dominated world." [32] The European Training Foundation describes transferable skills as being "key features of human labour", distinguishing them from the capabilities of technology. [33]

In the context of the green transition, the ILO highlights that core skills can support all workers to navigate labour market disruption brought about by the green transition, through supporting them to transfer across occupations. Core skills also have value in equipping people to apply novel technologies and processes introduced as part of efforts to green industries, and to contribute to wider change processes. [34]





"AI SKILLS"

Several governments have placed a focus on providing citizens with AI training, seeing the acquisition of "AI skills" as a way for workers to boost employability.

WFCP member institutions are also carefully considering how to embed AI literacy into other non-related courses. Hong Kong Metropolitan University, for example, "has embedded the technology into core teaching" with learners actively encouraged to use AI tools within a very clear ethical framework provided by the institution.

In our 2024 Global Statement, *Harnessing Artificial Intelligence in Professional Technical Education and Training*, WFCP recommended that all learners be given the opportunity to develop digital literacy, and a basic critical understanding of AI, and noted that TVET institutions may also need to respond to demand from employers, and develop specialized courses providing opportunities for learners to develop occupational skills in AI-related disciplines.

College leaders and policymakers must be clear-eyed however on the relative value of "AI skills" training. Governments should recognise that "AI skills" or "AI literacy", on their own, are unlikely to be sufficient to prepare citizens to adopt new technologies, and navigating labour market transitions, where citizens do not also have the literacy, numeracy, critical thinking and problem-solving skills discussed above. There is a danger that skills policy responses to AI and automation are being developed too narrowly. Skills such as prompt engineering or deployment of AI systems could themselves rapidly become obsolete, or liable to be automated, as AI technologies evolve. [37]

CASE STUDY: AI SKILLS INITIATIVES

Several AI competency frameworks for students have been developed, most notably by UNESCO, but few are specific to TVET. UNESCO's AI Competency Framework combines technical content on 'AI techniques and applications' and 'AI system design' alongside values-based content on the 'ethics of AI' and 'human-centred mindset'. [35]

Numerous governments have developed digital platforms that provide introductory online training on AI literacy to citizens. Examples include KI-Campus in Germany and FutureSkills Prime in India. Both provide short online courses, and the ability to download a certificate upon course completion.

Simultaneously, some governments are investing in developing AI-related technical skills and capabilities in their workforce. In Nigeria, the "3 Million Technical Talent" initiative, developed by the Federal Ministry of Communications, Innovation & Digital Economy aims to generate a pipeline of technical talent. Delivered through a combination of self-paced online learning and in-person sessions run by training providers, the initiative will see an initial cohort of 30,000 Fellows (learners) undertake courses lasting 3 months. AI and Machine Learning is one of 12 technical skills covered by the initiative's pathways.[36]

CURRICULUM "GREENING"

There is likely to be a need to review TVET curricula and consider whether content needs to be updated to reflect the requirements of the green transition. In some curriculum areas updates may need to be made in response to emerging occupational requirements, but the extent to which the green transition will impact on occupations varies. A report published by England's then-Institute for Apprenticeships and Technical Education argues that occupations can be considered as light-, mid- or dark- green, with different implications for curriculum. [38]

- Light green occupations (such as in hair and beauty) are largely unchanged in terms of skills demanded, but may benefit from some content to be added to curricula regarding the sustainability of materials being used.
- Mid-green occupations (such as certain disciplines within construction and engineering) may require the addition of new knowledge and skills related to adoption of new green technologies and materials.
- Dark-green occupations (such those in sustainability management, renewable energy or waste management) are those directly working "within the green occupational landscape", where green content will be a more substantive aspect of curriculum. [13]

Numerous organisations have taken a principled view that all learners should be given a foundation in concepts related to the green transition.[39] The ILO argues that everyone should be given some foundation in environmental awareness "so that all can benefit from the transitions". [14] The German development agency, GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) meanwhile supports the mainstreaming of 'generic green content', such as environmental awareness into TVET curricula. [40]



CASE STUDY:
FOSSIL FUEL RETRAINING PROGRAMMES

Several countries are developing Retraining Programmes designed to support workers to transition out of fossil fuel-dependent industries.

- In Romania, the Romanian Wind Energy Association is planning to retrain around 8000 former coal miners in areas such as wind turbine blade repair and photovoltaic panel installation.[41]
- In the UK, government is working with industry to develop a 'skills passport' that will assist oil and gas workers to transition into roles in offshore wind. A pilot scheme will also see some dedicated skills funding targeted at geographical areas that are likely to be particularly impacted by the green transition. [42]
- An Erasmus+ initiative has seen the development of a new curriculum designed to support coal workers to transition into the renewable energy industry, based on analysis of skills complementarities and gaps. The materials developed are available as Open Educational Resources.[43]
- In Spain, the government has agreed to offer and fund vocational training and employability support for workers at soon-to-be-closed coal plants. €95m has also been allocated to upskill the automotive workforce as the industry shifts away from combustion engines.[44]
- In China, the national government has budgeted 10 billion yuan for the retraining of workers in the coal and steel sectors, whilst in France, €50m has been committed by the government and two car manufacturers to support retraining of foundry workers.[45]



ACCELERATING CURRICULUM UPDATES

Several focus groups participants (from countries in Europe, Africa, Asia and Oceania) noted that curriculum revision processes were lengthy and lagged behind industrial developments.

"The process for making official qualifications under our national training framework is a slow process" – TAFE Directors Australia

"You do notice that the way the curriculum design responds to the changes is slower than the rate at which technology hits the labour market. So, the issue of curriculum review should be clearly a priority" -WFCP Member Organisation, Africa

Recent OECD research has highlighted that, in many countries, development and updating of vocational qualifications takes years, but that there is potential for technological solutions to speed up the process of updating the occupational standards that are often used as the basis for curricula.[46] Governments should look at what can be done to speed up qualification development and update processes to help ensure that TVET curricula reflect important developments in technology and industry practice.

RECOMMENDATION

TVET institutions should:

- Review delivery models to support retraining and lifelong learning. This may include elements of evening/weekend delivery, blended or online courses, and short courses; and considering whether adaptations are required to better meet the needs of these groups who are under-represented in labour markets,
- Deepen partnerships with employers to help maintain curriculum relevance and currency. This could include co-design of real-world projects; work-based learning modalities such as internships and apprenticeships; bringing employers on-campus; and align training with major infrastructure investments.
- Review and revise curricula for occupations most likely to be significantly impacted by automation and the green transition
- Embed foundational content on AI literacy and environmental awareness into initial TVET courses
- Ensure that initial TVET courses give learners the opportunity to develop the core / transferable and foundational skills (including numeracy, literacy, digital) they will need to adapt to labour market demands

How should governments respond to these trends?

In many countries, the potential scale of change in labour markets, and the potential skilling challenge is significant. Governments need to act now, in partnership with TVET institutions, to build TVET systems that can deliver lifelong learning and retraining at scale.

01. Financing

There is a need to ensure that TVET providers have the scale of resources required to adapt, and deliver what the skilling challenge requires. In many countries, TVET is under-resourced, with the World Bank highlighting, for example, that government spending on TVET in low-and-middle-income-countries is "relatively low."[47]

Having sufficient financial resources available for TVET were raised by multiple focus group participants, including representatives from Europe, the Middle East and Africa.

"Centres need sustained and sustainable investment, as well as a specific economic plan to adapt to new needs and technologies... this must also include the human resources needed for teaching, guidance, management and support services"

– FPEmpresa - Asociación de Centros de Formación Profesional (Spain)

Governments will also need to give careful thought to how skilling interventions required by automation should be financed. There is a strong case for development of innovative financing mechanisms, such as skills levies in sectors that are AI-exposed, to capture some of the value firms gain from automation. Revenue from these mechanisms could be used to cover some of the costs of upskilling for employees, and reskilling for those whose jobs are destroyed.

The costs of training and retraining cannot be left to fall solely with individuals. In many countries, access to funding for skills development is often dependent on factors such as age or employment status. This can lock some citizens, particularly those who are debt averse or sensitive to the sticker price of training, into shrinking sectors.

CASE STUDY: FINANCING LIFELONG LEARNING AND RETRAINING

INDIVIDUAL LEARNING ACCOUNTS

In the last few years, several governments have taken action to improve access to financing for skills programmes through introduction of Individual Learning Accounts (ILAs). ILAs are "savings accounts" that allow citizens to accumulate funds that can be used solely for learning.

In France, all employees or self-employed persons are credited with €500 per year (up to a maximum balance of €5000) into a Compte Personnel de Formation (personal training account), which can be spent on professional qualifications. An additional €300 is credited to low-skilled or disabled workers (who also benefit from a higher maximum balance). The initiative is funded through a training levy on employers, with a total cost of more than €2bn annually in 2023.[48]

Czechia is one of several countries to have used EU funds to pilot an Individual Learning Account system. Their ILA offers up to €2000 to prospective learners looking to improve their digital skills (including courses relevant to robotisation, digitisation, autonomous systems and AI. Learners are required to contribute 18% of the cost of training themselves.[49]

In Singapore, the SkillsFuture initiative, launched in 2015, provided all Singaporeans with a S$500 credit, with additional subsidy available for workers in low-wage jobs or older workers. [50] For those looking to re-train into a new occupation in a growth sector, "Career Conversion Programmes" can cover up to 90% of salary, significantly de-risking career transitions.[51]

"WORKFORCE PELL"

In the United States, needs-based "Pell Grants", historically limited to undergraduate higher education provision, have, in 2026, been extended to short-term (150-599 hours of instruction) vocational programmes in "high-skill, high-wage or in-demand" occupations. Programmes must achieve a completion rate and job placement rate of more than 70% in order to be eligible for funding. The extension is expected to cost $2bn over the next 10 years.[52]

02. Trust and flexibility

Workshop participants from multiple countries expressed the view that their institutions were unduly constrained in what they were able to do by bureaucratic requirements, particularly in comparison to other parts of the education sector.

There was a strong view that giving institutions more flexibility in areas such as funding, regulation, curriculum, accreditation and assessment, would help them to be more responsive, and enable them to deliver education and training that better aligns with economic need and learner demand.

"We are expected to respond quickly to employer needs, but often there is such a bureaucracy that if we want to change some qualification structures or whatever, it's really hard for us. We need more flexibility to adapt curricula... fast development in the economy needs fast development in schools."

– School Centre Kranj, Slovenia

"Greater flexibility in how education and training are delivered is essential. Where there is greater trust and fewer constraints, providers can respond more effectively to the changing needs of learners and employers."

– Capital City College, United Kingdom

"There is also need for a more defined autonomy and reducing bureaucratic procedures. Engaging with industry needs quick decision making."

- Harare Polytechnic, Zimbabwe

TVET institutions should be judged principally on the extent to which they support learners to achieve their intended outcomes. Potential measures could include labour market measures (capturing when learners move into employment, progress within employment, or experience an increase in earnings); impact measures that capture utilisation of skills acquired in the workplace, or reductions in the skills gaps reported by employers.

03. Data and insight on skills demand and learner outcomes

Governments can also play a role in building the labour market information (LMI) infrastructure that TVET providers need to inform decisions about their education and training offer. Analysis of future skills demand requires triangulation across sources such as survey data, administrative data already held by governments, and commercial datasets (such as job vacancy posting data). Governments are likely to be well placed to develop the systems and analytical capabilities required to effectively analyse these datasets as a shared service.

Data on skills demand, and the outcomes that learners achieve completing their courses, should also be made available to prospective learners in intuitive and accessible formats to help them make informed decisions about career pathways. This data may help to steer prospective learners to areas that have clear occupational demand.

Examples of current shared LMI infrastructure include the dashboards built for Singapore's Jobs-Skills Portal, Australia's Jobs and Skills Atlas, England's local skills dashboard, and Canada's Labour Market Information Council dashboards. In low-and-middle-income countries, Lightcast and UNESCO-UNEVOC have also partnered on a 'Global Skills Tracker' that analyses online job advertisements posted in countries including Côte d'Ivoire, Ghana, Kenya, Nigeria, Malaysia, the Philippines, Argentina, and Jordan.

However, a recent review suggests that the first indications of labour market change may come from other sources. The Mayor of London's AI and Jobs Taskforce recommended development of an AI Early Action System that combines traditional 'labour market intelligence' with 'employer intelligence' (from employers, recruiters, and industry bodies), and 'local intelligence' from local government, trade



unions, education institutions and citizens. The Taskforce envisaged that early indications of any significant AI-related labour market change, would trigger rapid convening of partners to develop a co-ordinated response, which could include re-prioritisation of skills investment, and updating of careers advice.[53]

04. Developing a culture of lifelong learning

Finally, if reskilling and upskilling efforts are to be successful, governments and TVET institutions are likely to need to work together to support engagement in training by new groups of learners.

A potential model for this is provided by Singapore's SkillsFuture initiative, which has been deliberately developed as a "national movement". Alongside the co-financing of learning highlighted in the case study above, a partnership between Government, individuals, employers, unions and industry partners has worked to promote participation in upskilling and reskilling efforts.[54]

Target groups for training will likely include workers whose jobs may be at risk due to automation or industrial greening, and groups who are under-represented in the labour market, such as women, migrants, older people, and young people.

Action to promote participation in training could include:

- establishing and scaling up partnerships with employers, trade unions, and community organisations in order to reach these groups.
- increasing awareness of opportunities for training (and the potential benefits and labour market returns) through public awareness campaigns, or through support for careers guidance
- concerted policy action to overcome some of the wider barriers to learning, and barriers to employment that these groups face.
- considering whether adaptations to existing TVET provision are required to better meet the needs of these groups - some of whom may not have engaged in learning in some time

In the context of older people, the OECD describes lifelong learning as "the key to aging well". It highlights that providing mid-life career guidance (either free of charge or at a subsidised rate) and providing incentives for participating in adult learning can help to keep older adults in the workforce for longer. Mid-life and older adults are likely to favour shorter courses, with content that they can relate to their everyday practical experience. [55] Other actions beyond TVET, such as tackling ageism in recruitment, is also likely to be required to close the employment gap among older people.

RECOMMENDATION

Governments should:

- Work in partnership with TVET institutions and other organisations to develop a clear vision and plan for building a lifelong learning and retraining system in their country. This could include:
    - establishing and scaling up partnerships with employers, trade unions, and community organisations to reach target groups of prospective learners
    - increasing awareness of opportunities for training (and the potential benefits and labour market returns) through public awareness campaigns, or through support for careers guidance
    - concerted policy action to overcome some of the wider barriers to learning, and barriers to employment that disadvantaged groups face.
- Ensure TVET institutions have the level of financial resources required to deliver initial TVET, lifelong learning and retraining at scale. This could include exploring mechanisms to capture some of the financial value businesses gain from automation of work to contribute towards the costs of retraining.
- Enhance workforce resilience and preparedness for labour market disruption through giving citizens access to funds to support lifelong learning and re-training.
- Give TVET institutions greater flexibility in funding, regulation, curriculum, accreditation and assessment, to enable them to deliver against education and training that better aligns with economic need and learner demand. TVET institutions should be judged principally on the extent to which they support learners to achieve their intended outcomes.
- Build labour market information infrastructure that TVET institutions can use to inform decisions about their education training offer, and learners can use to make informed career decisions.
- Take steps to speed up qualification development and update processes to ensure that TVET curricula reflect important developments in technology and industry practice

References

1 Institute for the Future of Work (2025) Final Report of the Pissarides Review into the Future of Work and Wellbeing.

2 M Jaumotte, J Kim, D Koll, E Li, L Li, G Melina, A Song & M Mendes Tavares (2026) Bridging Skill Gaps for the Future: New Jobs Creation in the AI Age. International Monetary Fund.

3 See, for example, IPSOS Mori (2026) Ipsos AI Monitor 2026. Available at: https://www.ipsos.com/en/global-attitudes-ai-2026-wonder-vs-worry-divide-deepens

4 Institute for the Future of Work (2025) Final Report of the Pissarides Review into the Future of Work and Wellbeing.

5 M Massenkoff & P McCrory (2026) Labor market impacts of AI: A new measure and early evidence. Anthropic.

6 European Training Foundation (2025) The future of skills in ETF partner countries. Cross-country reflection paper: a multifaceted innovative approach combining Big Data and empirical research methods.

7 M Cazzaniga, F Jaumotte, L Longji, G Melina, A Panton, C Pizzinelli, E Rockall & M Mendes Tavares (2024) Gen-AI: Artificial Intelligence and the Future of Work. International Monetary Fund.

8 M Kinder, X Briggs, M Muro & S Liu (2024) Generative AI, the American worker, and the future of work. Brookings Institution.

9 Jaomette et al (2026) Bridging Skill Gaps for the Future: New Jobs Creation in the AI Age. International Monetary Fund.

10 CEDEFOP (2025) Preparing for 2040: four AI-powered scenarios for the future of continuing skills development.

11 ILO (2025) Workforce 2030: Skills for thriving in the green and digital transition

12 E Dierdorff, J Norton, C Gregory, D Rivkin & P Lewis (2011) Greening of the world of work: Revisiting occupational consequences. National Center for O* NET Development.

13 ILO (2019) Skills for a greener future. A global view.

14 ILO (2025) Workforce 2030: Skills for thriving in the green and digital transition.

15 ILO (2025) Workforce 2030: Skills for thriving in the green and digital transition.

16 OECD (2025) Employment Outlook 2025: Can We Get Through the Demographic Crunch?

17 Mastercard Foundation (2026) Africa Youth Employment Outlook 2026

18 World Economic Forum (2025) Future of Jobs Report 2025

19 World Economic Forum (2025) Future of Jobs Report 2025

20 M Crawford-Urban and S Johal (2020) Understanding the Future of Skills: Trends and Global Policy Responses. Future Skills Centre

21 CEDEFOP, “Initial vocational education and training”, Terminology of European education and training policy:, https://www.cedefop.europa.eu/en/tools/vet-glossary/glossary/berufliche-erstausbildung

22 Windfall Trust, “Workforce Training and Reskilling Investment”, Windfall Policy Atlas, https://windfalltrust.org/policy-atlas/workforce-training-and-reskilling-investment

23 UNESCO UNEVOC (2019) UNESCO-UNEVOC trends mapping: Innovation in TVET.

24 WFCP (2021) Global Statement on the Future of Professional Technical Education and Training.

25 EU Global Gateway, "Team Europe Initiative Opportunity-driven Skills and VET in Africa" https://international-partnerships.ec.europa.eu/document/download/c5b4325f-0faf-4a38-9e13-b6e23b72a3fc_en?filename=TEI%20OP%20VET%20-%20Factsheet%20-%20ENG.pdf (accessed 12 October)

26 Jaomette et al (2026). Bridging Skill Gaps for the Future: New Jobs Creation in the AI Age. International Monetary Fund.

27 Institute for the Future of Work (2025) Final Report of the Pissarides Review into the Future of Work and Wellbeing.

28 ILO (2025) Workforce 2030: Skills for thriving in the green and digital transition. Babcock et al, The Skills Imperative

29 World Bank (2025) Digital Progress & Trends Report 2025

30 World Bank (2025) Digital Progress & Trends Report 2025

31 ILO (2025) Workforce 2030: Skills for thriving in the green and digital transition;

32 L Bocock, M Scott & J Hilary (2025) The Skills Imperative 2035: Creating a system of lifelong learning to provide the essential skills for tomorrow's workforce. National Foundation for Educational Research.

33 ETF (2024) The Future of Skills in ETF Partner Countries - Cross-country reflection paper: a multifaceted innovative approach combining Big Data and empirical research methods.

34 ILO (2019) Skills for a Greener Future

35 UNESCO (2024) AI competency framework for students

36 Federal Ministry of Communications, Innovation & Digital Economy (Nigeria), "Shaping the Future of Nigeria's Digital Workforce", https://3mtt.nitda.gov.ng/ (accessed 12 October)

37 J Ransom (2026) "Four signs we're fighting the last war". Reskilled.

38 Institute for Apprenticeships & Technical Education (2020) Sustainability Framework: a guide for trailblazer groups and route panels.

39 ILO (2025) Workforce 2030: Skills for thriving in the green and digital transition

40 GIZ (2022) Skills for a Just Transition to a Green Future.

41 International Energy Agency (2022) Skills Development and Inclusivity for Clean Energy Transitions

42 UK Government, "Support for workers to benefit from thousands of clean power jobs", https://www.gov.uk/government/news/support-for-workers-to-benefit-from-thousands-of-clean-power-jobs (accessed 12 October)

43 OECD (2024) Reskilling coal industry workers for the renewable energies sector

44 International Energy Agency (2022) Skills Development and Inclusivity for Clean Energy Transitions

45 International Energy Agency (2022) Skills Development and Inclusivity for Clean Energy Transitions

46 OECD (2026) Developing Vocational Education and Training with Artificial Intelligence.

47 World Bank, ILO & UNESCO (2023) Building better formal TVET systems: Principles and practice in low- and middle-income countries.

48 OECD (2025) Adult Skills through Individual Learning Accounts: A Step-by-Step Guide for Policymakers.

49 OECD (2025) Adult Skills through Individual Learning Accounts: A Step-by-Step Guide for Policymakers.

50 C Hong Tat, "Singapore's SkillsFuture Movement" in L Byrne (ed) The Future of Work for the People we Serve. Parliamentary Network on the World Bank and IMF.

51 Skills & Workforce Development Agency, "Career Conversion Programmes for Individuals", https://www.swda.gov.sg/home/individuals/attachment-placement-programmes/career-conversion-programmes-for-individuals

52 M Pearson (2026) ‘Don’t get too excited about Workforce Pell yet’, Community College Daily. Available at: https://www.ccdaily.com/2026/07/dont-get-too-excited-about-workforce-pell-yet/(accessed 12 October)

53 M Lane-Fox et al (2026) Shaping how AI changes work in London: The report of the London AI and Jobs Taskforce.

54 SkillsFuture, “SkillsFuture Movement”, https://www.skillsfuture.gov.sg/aboutskillsfuture (accessed 12 October)

55 OECD (2025) Employment Outlook 2025: Can We Get Through the Demographic Crunch?