

SKILLING GREENING

NO GREEN TRANSITION WITHOUT SKILLS: ACT NOW!

Time to bring skills in the loop

The green transition implies a transformation of all economic activities and sectors - as well as lifestyles. This transformation, similarly to any societal change, can only be achieved through a whole-of-society mobilisation with actors taking responsibility, contributing and collaborating towards a shared model of environmental sustainability and social fairness as well as ensuring resilient economies.

Only seldomly, skills are included in concrete measures and plans to support the green transition. Human capital is often not considered as an important element to pave the way for a more just, sustainable future.

But who will take responsibility, change production processes, install and maintain clean technologies if not people equipped with those skills that allow them to understand and work with new green technologies? Who will act and consume more consciously, if not young people and adults with knowledge, values and attitudes that help them take pro-environmental decisions in their work and lives?

The green transition could create millions of jobs but information about new emerging jobs will be key to develop relevant skills policies

The transition to environmentally sustainable and inclusive economies and societies cannot take place if the skills demanded by the new jobs are not available in the labour market. The transition therefore is conditioned by the adequate development of skills that allow people to grasp the new opportunities. In turn, this is also key to avoid that people are redundant or have obsolete skills that generate imbalances and mismatches.

Forward looking skills strategies based on solid data about new jobs, new occupations and new tasks in old jobs are needed to train youth and reskill adults to meet the demand generated from the transition process across economic sectors. In this sense, skills intelligence is key to provide information on new skills needs and inform education and training authorities, so that policies can be adapted accordingly.

A recent evidence suggests that changes are happening across economic sectors and skills levels: this sheds light on the need to adopt a comprehensive approach to skills development, impacting all workers and potential workers, ranging from high skilled to medium and low skilled occupations. The European Training Foundation (ETF) research shows that both technical skills (skills that enable professionals to effectively use green technologies and processes) and transversal skills (knowledge, skills and attitudes that allow people to work and live in a more sustainable manner) are needed across countries to enable the green transition.

Skills demand is continuously transformed by different drivers of change also linked to the green transition

Through the use of Big Data and traditional methods of research, [ETF studies on the future of skills in economic sectors](#) provide evidence on different drivers of change impacting on emerging skills needs. What studies point out is that the climate change as well as the green transition are important drivers of change for economic sectors, and for skills demanded.

Aridity and water scarcity, for instance, are issues that concern many countries. Severe droughts affect agricultural production quantity and quality and efficient water management becomes a key element to ensure environmental sustainability. This impacts on the type of cultures and crops, with a preference for those that consume less water and, in general, are more resistant to water scarcity. This imposes the adoption of innovations, such as the development of new irrigation technologies that allow for more efficient use of water (drip irrigation); the construction of wells to avoid drawing water directly from the main supply; and the introduction of new varieties of plants that have higher resistance to water stress.

Energy efficiency is becoming increasingly important, especially after the energy crisis exacerbated with the Russian aggression to Ukraine. Several companies across countries introduced improved energy efficiency systems, and start using (or consider the use) of alternative energy sources such as photovoltaic solutions will likely be adopted. The energy production from biomass will also become more frequent, also due to an increased awareness of the need to reduce waste from the production processes. Improvements in resource use, efficiency and waste management will also be introduced in relation to logistics, together with techniques such as organic farming, favouring the reduction of emissions and reduction of the environmental impact of crops, better soil and water quality, lower energy consumption and better energy efficiency.

Emerging technologies also strongly impact the green transition. In the agri-food sector in Morocco, for instance, an ETF analysis of patent data suggests that innovations in irrigation systems, biochemistry and pesticides and fertilisers have been relatively commonplace (as indicated by the relatively large number of patents filed) and are likely to bring about future change in the sector. There are also a range of other technologies/technological processes which are important for the sector such as solar thermal devices (solar collector, heating devices, heat carrier medium), telemetry for reducing energy consumption and harvesting machines for precision farming.

Change in the tastes of consumers and greater environmental awareness also impact on goods and services. Shifts in the lifestyles and consumer preferences, especially new demands for quality and clean and safe products in agri-food (with less or no use of chemical products), new more environmentally friendly solutions in the automotive sector, more energy efficient materials or technologies in constructions, textile or craft open up new market opportunities. This determines a rising demand for new products and associated business models.

Last but not least, **new development models**, based on green technologies and sustainable development, can become profitable niches for countries that are in transition or development, with benefits for both market proposition and job creation. Public policies can provide important incentives in this direction and veritably lead to a systemic change. In Morocco, for instance, the Génération Green plan (ie the governmental plan for the development of the agriculture sector up to 2030) has sets ambitious targets for organic farming, aiming at higher quality and healthier foods, with lower environmental impact of crops, through the non-use of fertilisers and chemicals in the soil. Companies are gradually implementing green strategies in their businesses and they are moving towards healthier and more respectful (for the environment and for future generations) solutions.

Changes are taking place across economic sectors, with impact on most occupations

Changes due to the green transition happen across various economic sectors and across skills levels. In fact, the change does not affect only people with high skills level, as originally supposed. On the

contrary, ETF findings in different sectors and countries all point to the impact of change on all skills level – high medium and low – with technology related occupations and business services and related occupations both being affected by (technological) change.

For instance, in Morocco, the results of [the ETF analysis in the agri-food sector](#) revealed that the jobs which are likely to be most affected by technological change include technical or technology-related occupations, such as engineers and technicians in various technological areas, especially those related to the value chain, maintenance, and energy efficiency (water plant technicians, biochemical engineers, sensor engineering technicians, bioengineers, water engineers, fluid power engineers and wastewater engineers and technicians); agriculture-related professionals such as agronomists, soil and plant scientists, irrigation specialists and food scientists; and business services and related occupations, such as renewable energy consultants and representatives; food managers; different types of production team leaders, such as agronomic crops, horticulture and fruit; and horticulture production managers. Also, the information collected revealed new tasks in old occupations, such as in the case of agronomists, who will have to possess a wider range of knowledge compared to the past, including, for example, precision agriculture techniques.

Entirely new professions will emerge as well, typically at the boundary between disciplines. These new jobs include, for example, those related to the new niche markets that will emerge, such as environmental economist or nutritionist engineer (expert in technological processes but also in consumer preferences and habits).

In Armenia, [the ETF research on the construction sector](#) (upcoming), showed that, compared to other drivers, the environmental impact is the one that most frequently appears within scientific papers. The construction industry is contributing to the sustainability agenda through numerous strategies to improve energy efficiency in design, materials, and conditions of buildings. The so called “green building activity” continues to rise, and it’s driven by both environmental regulations to reduce carbon emissions and client demands. Natural events, such as earthquakes, floods, mudflow and landslides are more and more recurrent and severe, due to climate change, and requires specific techniques to prevent them or mitigate them. In this context, new job profiles emerge and are growing in demand, such as high skilled technical occupations (e.g. civil engineer), medium and low skilled technical occupations (e.g. crane technician), and business services related occupations (e.g. energy manager). In other words, the change is not limited neither to highly skilled profiles, neither to technical professions only, since managers, salesmen and alike also need to master new technologies. Some new jobs also appear, especially emerging from innovative cross-sectional sectors. For example, energy engineers, solar energy engineers, and energy managers who plausibly refer to the emergent necessity of including concepts related to sustainability, energy efficiency and environmental impact, within the construction design processes.

The massive change in skills needs generated by the green transition requires major investments in adapting initial education and training

To ensure that green skills are a catalytic asset rather than an impediment for countries’ growth and development, countries need to include the skills component within their green transition objectives. This requires more relevant and agile initial education and training systems led by reliable skills anticipation mechanisms, constant adaptation of qualifications and learning outcomes, effective private sector engagement, as well as trained educators, carbon neutral and resilient infrastructures and advanced career guidance services for learners of all ages.

This has fundamental implications for education and training systems, including modernising teaching and learning practices, rethinking the organisation of provision, ensuring mechanisms for the validation of skills that people develop throughout their lives as well as promoting partnerships among different actors.

In this context, formal education and training systems are key to ensure that, from early childhood and across all types of education, all learners are adequately prepared for life and jobs in a green

economy's labour market. This learner-centred approach also implies professional development of teachers and trainers to modernise their methods as well as promote sustainability values in teaching and learning processes.

Despite a rather limited current demand linked to green jobs, as indicated by the [ETF analysis of online job vacancies in Tunisia](#), a recent study on the [skills for the future in the energy sector](#) showed that the combined investments in renewable energy and energy efficiency could create thousands of new jobs in the country in the near future. In particular, professionals with vertical competences related to specific sub-sectors will be needed (e.g. wind energy engineers, substation engineer, drilling engineer, oil refinery control room operator), together with others with more transversal competences covering more or all sub-sectors (e.g. mechanical engineer, energy engineer, manufacturing manager). In general, all energy workers will need a wider set of skills than before, to master for instance the use of various technologies, such as more specific know-how in solar energy and management of energy projects.

To meet the demand, new updated curricula would need to be developed, including new and specific technologies and practical skills. This would fill the current gap of a system in which, despite the great opportunities linked to the specific geographical condition, only few specific courses on energy and renewable energies exist, and often very expensive and inaccessible to part of the population.

Vocational education and training (VET) plays a major role in the availability of green skills ensuring young people and adults acquire both the technical/occupational skills and, more generally, the transversal competences to live and work in more resource efficient and less polluting societies. This is particularly true in a context of growing demand for post-secondary VET. The direct implication is that new training programmes and new qualifications need to be introduced for emerging green jobs but also that existing training programmes for traditional qualifications need to be reviewed, with a specific integration of green skills among their learning outcomes. Consequentially, occupational standards for existing qualifications also need updating, to make sure that, for instance, plumbers learn also about heat pumps or mechanics learn about electric engines, on top of other more traditional techniques.

A substantial upskilling and reskilling of all workers is also a must

However, working on developing the best possible and most relevant initial education would not be enough to support the green transition.

This is the case, for instance, of the so-called “grey collar workers” in [the automotive sector in Turkey](#) – i.e. the category in between blue- and white-collar workers. The ETF study on this sector highlighted the importance of grey-collar workers, which implies the upskilling of existing blue-collar employees and indicates that higher levels of education and training will be required for post holders to be fully competent in these jobs. It also suggests a shift in occupational structures towards more people being employed in medium- and high-skilled jobs, and much fewer in low-skilled positions. This is also the case, for instance, of agronomists in Israel, where [the ETF research on the agri-tech sector](#) showed that also workers in traditional occupations already need new skills to understand the interface with new green technologies (eg precision agriculture techniques).

In fact, as change happens at an unprecedented speed, all citizens will continuously face changing skills requirements, linked to frequent and diverse learning needs throughout their career. For this reason, upskilling and reskilling will be key to ensure adaptability and movement between sectors and occupations, to allow reconversion and personal growth and development. In particular, ensuring accessibility to upskilling and reskilling opportunities to all diverse groups will provide people with the possibility to grasp emerging opportunities offered by new jobs or to continue to perform their old job in a new way.

Lifelong career guidance, together with wider support provided by public employment services, will need to be embedded in education policies to accompany citizens navigating this process by providing updated careers information, e.g. sectors with growing employment opportunities and corresponding

training paths. Continuous training through different forms of learning (non-formal, informal) will be key to ensure employees and job seekers can get the needed support to change jobs or even industries.

Skilling the green transition can unlock the potential of developing countries

Countries will succeed or fail based on their capacity to manage their transition to the future and on their ability to develop a vision to advance toward a better, more sustainable future.

The responsibility is of everyone. Everyone should act to make the green transition a reality. Government, companies, citizens should all play a role to comply with the Paris agreement. Critical action is needed to reduce emissions, to mitigate and adapt. Actors working together can facilitate investments in renewable energies and can build the human capital to power those energies.

Breaking the silos will be essential to ensure that all actors can work together toward a common objective. Public private partnership, leveraging financial possibilities, blending funds, using guarantees to make investments in emerging green sectors are among the priorities promoted by the European Union as part of its Green Deal and can inspire the dialogue among business leader and decision-makers at the COP27 and beyond.

Skills are a key part of the equation, with skills contributing to both adaptation and mitigation. Countries will have the chance to develop climate and environmental policies that integrate and recognize skills development as one of the key aspects to allow the transition to an environmentally sustainable and low carbon economy. In particular, developing and transition countries will have the great opportunity to accelerate the transformation towards new development models, based on a socio-economic and ecological transformation that puts individuals at the heart of countries' policy agendas and that respects human well-being and the environment.

As recognised by the European Commission in its recent European Skills Agenda for sustainable competitiveness, social fairness and resilience, digital and green transitions are reshaping people's lives, jobs and relationships, and these trends have been accelerated by the pandemic. Such transitions reveal a need for an unparalleled shift in skillsets in order to reap their full potential, not only in the EU but around the world. Rising new forms of youth employment (new jobs, the platform economy, cultural shifts, etc.), emerging sectors, innovations in technology, the accelerated digitalisation of jobs and new forms of digital learning are all opportunities that governments need to grasp to provide fresh prospects for younger generations.

Building skills for the resilience of individuals and companies and developing agile, coordinated and targeted public policies will be key to support the transition to a greener future and to improve the quality of existing jobs. No green transition will be possible without people equipped with the right skills to make it happen.

Disclaimer

This article was prepared for COP27 by Francesca Rosso and Romain Boitard, ETF.

The contents of the report are the sole responsibility of the ETF and do not necessarily reflect the views of the EU institutions.

© European Training Foundation, 2022

Reproduction is authorised, provided the source is acknowledged.