

TALENT PARTNERSHIPS AND FUTURE SKILLS NEEDS

Mattia Di Salvo

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Talent Partnerships and future skills needs. Fostering collaboration on human capital development in the Mediterranean

Mattia Di Salvo
Researcher, CEPS



Introduction

Since the proposal of pilot projects in September 2017, and of the Talent Partnerships (TPs) in September 2020 with the New Pact on Migration and Asylum,¹ the policy debate on legal pathways for labour migration has gained momentum in the European Union. The shift towards “talents” hints at the intention of inter-linking migration and skills development when defining new partnerships with partner countries. Targeting common skills needs and supporting human capital development at origin are the two elements behind this approach.

Future partnerships will have to tackle short-term needs related to labour market forces while accounting for medium to long-term needs related to human capital development, identifying skills needed today and those that will progressively become more relevant in the future. Global transitions affecting economies and labour markets, such as the green and digital ones, are major factors to account for when cooperating, for instance, on training and education.

Neighbouring regions have strong incentives to cooperate and protect shared ecosystems. Countries bordering the Mediterranean, for instance, can leverage on proximity and existing relationships to implement common actions and share best practices on different areas (e.g., transportation, production of renewables, and digital networks) as well as on economic activities to preserve (e.g., fishery). Similar skills will be necessary to design and implement changes towards more sustainable and digital

societies, as well as to benefit from their potential in the future.

Opposite demographic trends between the EU and neighbouring regions are another key factor for boosting cooperation on migration and designing partnerships that account for long-term needs (Clemens et al., 2019; Villa & Corradi, 2020; ILO & IOM, 2021): besides for new vacancies in growing occupations, in the future the EU will face considerable replacement needs across the entire workforce and skills levels; at the same time, the young populations of African and Middle East countries, which are experiencing high unemployment rates today, are expected to grow exponentially in the future.

Apart from growing population, emigration rates from low- and medium-income countries are expected to increase further as people gain higher incomes: this effect, called migration-hump, describes a non-linear relationship between economic development and emigration rate, for which the latter increases at higher levels of gross domestic product (GDP) per capita until a turning point² after which it starts falling (Clemens, 2014; Clemens et al., 2019). The increases in irregular crossings in recent years from countries with usually low acceptance rates of asylum applications, such as Morocco and Tunisia, are first signals of a growing need for better opportunities for labour migration.

The purpose of this study is to identify possible areas on which TPs can be developed within a mutually-beneficial framework with Southern Mediterranean countries.³

1. EC (2017) and EC (2020).

2. Clemens (2014) estimates that relationship changes markedly somewhere around PPP\$6,000–8,000.

3. Countries covered are Algeria, Egypt, Libya, Lebanon, Jordan, Morocco and Tunisia, to the extent possible given data limitations.

First, the pilot projects and other skills mobility partnerships are analysed to identify best practices in determining skills needs and facilitating international skills matching. The first section concludes with an explanation of the rationale and conditions of the Global Skill Partnership (GSP) model to facilitate migration while developing human capital at origin.

A review of the concepts of green economy, jobs and skills is developed in the second section to understand implications for future labour market needs. Specific attention is given to the role of transversal skills in increasing workers' resilience and mobility, and examples of international cooperation enhancing Technical and Vocational Education and Training (TVET) systems to up- and re-skill workers for the twin transition⁴ are provided. The second section concludes with an analysis at the occupational level of most mentioned skills in online job vacancies today and forecasts of job openings by 2030 to provide descriptive evidence of short to medium term needs in the EU.

The third section compares countries in terms of Greenhouse gas (GHG) emissions, employment composition, and level of education and training to better assess the exposition to the green transition and possible areas of cooperation in the Euro-Mediterranean context. Sectors that are relevant contributors to GHG emissions and employ a considerable share of the population could in fact create significant opportunities for cooperation on up- and re-skilling, both for occupation-specific and green skills.

A last section wraps up the main conclusions of the analysis and spells out recommendations on what to account for when designing TPs for current and future skills needs, as well as where to possibly start testing new models with countries in the Southern Mediterranean.

Talent Partnerships as a new pathway for legal migration

TPs aim to enhance legal pathways to the EU, mainly for work opportunities, but also for study and training purposes. They foresee capacity building assistance in areas such as labour market and skills intelligence, and vocational education and training among others.⁵ While there are doubts on the specific design, it is clear that to succeed TPs should target skills and competences that are in need today, and that could become increasingly more important in the future for the labour markets of both countries of origin and destination (Dempster & Clemens, 2020; Gençsü et al., 2020).

Skills Mobility Partnerships projects: framework and best practices

In order to expand legal pathways to the EU, the European Commission (EC) proposed "pilot projects" in September 2017 as an important tool to foster overall cooperation on migration management with partner countries (EC, 2017): economic migration was the main focus and public-private partnerships (PPPs) were considered to be important for project implementation. In March 2019, the development of pilot projects was men-

4. The term twin transition embeds both the transition towards a green and a digital economy.

5. https://ec.europa.eu/home-affairs/content/talent-partnerships_en.

tioned among the key next steps to be implemented in the field of legal migration, stressing their role in “paving the way to a new approach on legal migration as they can test and put in place new structures and approaches to manage legal migration more effectively with key partner countries” (EC, 2019a).

Four pilot projects started in 2019 and were implemented under the Mobility Partnership Facility (MPF). Beside these specific four projects, however, there have been similar initiatives implemented under different frameworks. While projects on Skills Mobility Partnerships (SMPs) can differ in terms of scope (e.g., sectors and type of migration), they all share key mechanisms and best practices. The following sections draw on information from nine different projects, whose details and their comparison are reported in Table 4 in Annex.

PPPs at the core of SMPs

First of all, multi-stakeholder partnerships of a public-private nature (e.g., Ministries, Public Employment Services, TVET providers, companies) are behind all phases of the different projects seen so far. Moreover, these are cross-border PPPs, as they involve stakeholders from both origin and destination countries.

PPPs play a key role in the preparatory phase, with Public Employment Services (PES) and companies helping the implementing partner (e.g., international organisations working on migration, na-

tional development agencies) mapping and identifying labour market needs (EC, 2018; Stefanescu, 2020; Hooper, 2021). Over the different projects, two main approaches have been followed in this regard: mapping needs *common* to the two countries to leverage on mutual benefits of skills development and circulation; or identifying occupations that are in *surplus* in the country of origin to alleviate unemployment while still favouring exchange of know how.⁶ Both approaches therefore try to limit brain drain in the origin country depending on the needs identified in both labour markets, being them converging or diverging (i.e., deficit vs surplus).

When pilot projects try to identify occupations for which there is a need in both countries, pre-departure trainings target common skills needs and, in some cases, are offered to more people than the number of foreseen permits so to increase human capital at origin.⁷ In addition, these projects then offer reintegration support to facilitate skills circulation, supporting participants who return either because they want to work or establish their business in their country, or because they did not obtain a long-term contract at destination.

Besides mapping general labour market needs, multi-stakeholders' cooperation helps better understand companies' specific needs in terms of the characteristics and competences they are looking for in candidates.⁸ Employers sometimes also take part in the selection process,

6. Germany, for instance, has implemented different projects to alleviate a domestic shortage of nurses with countries experiencing a surplus in this profession (e.g. Philippines, Vietnam).

7. This is the rationale behind the Global Skill Partnership model, mentioned by the EC as the one to follow for the development of Talent Partnership (see pp. 14-15).

8. These projects usually receive a number of applications considerably above the openings available: for instance, 9,500 candidates for 116 training places and 30 permits in the PALIM project; and 4,000 applications for 30 internships in the IOM project between Belgium and Tunisia (Di Salvo & Ndoye, 2020).

for instance, by requiring participants to complete a test specifically designed by the company (IOM, 2021). This cooperation is therefore also helpful to better explain requirements to participants, provide support in the application process, as well as clarifications regarding possible rejections.

Therefore, PPPs are important for the selection process and the definition of requirements for pre-departure training, which, together with the assessment of labour market needs, are behind a successful matching between demand and supply.

PPPs can also ease compliance with procedures during the pre-departure stage: communication helps explain the requirements to companies, and the hurdles faced by companies to public stakeholders. Facilitating the compliance with administrative procedures – such as visa application and processing – enhances the trust of companies that the process of international hiring can be implemented within the expected time frame (Stefanescu, 2020; IOM, 2021).

With their flexible and experimental approach, pilot projects can thus favour exchanges and cooperation among stakeholders to better identify issues and provide innovative solutions, which might then be formalised for future activities.⁹

Fulfil participants' expectations throughout all stages

Together with the mapping of labour market needs, pre-departure training is another component to ensure a successful matching between demand and supply. Trainings are tailored not only to the types of vacancies and context at destination, but also to the main approach and aim of the project. Thus, employers can trust the project will find a good match to their needs and in a timely manner, while participants know they have developed the knowledge and skills required by the vacancy.

For projects targeting occupations in surplus in a country of origin and in shortage at destination, pre-departure training focuses mostly on language and general orientation, followed by on-site training upon arrival. Clearly, the more regulated and skilled the profession is, the longer the training and the higher the requirements.¹⁰

Most recent projects targeting common labour market needs, instead, aim at building and retaining skills in both countries by means of a mixed approach, which develops human capital at origin in pre-departure stage and provides reintegration support and guidance throughout job-seeking upon return. Generally, all projects¹¹ offer pre-departure orientation

9. The project between Germany and Vietnam that started in 2012, for instance, led to a Memorandum of Understanding defining the basis for fair recruitment of nurses, responsibilities of all stakeholders, types of training and certifications necessary, as well as benefits and support to participants. <https://vietnam.diplo.de/blob/1240466/e9df543dbee4beb2555602cfac7a5213/150703-absichtserklaerung-altenpflege-d-da-ta.pdf>

10. The Triple Win project covers a 12-month language course for a B2 in German and occupation-specific terminology before departure. In Germany, VET programmes or support for qualification recognition are provided depending on the different situations. See Table 4 in Annex Comparison of skills mobility partnerships.

11. See Table 4 in Annex

(PDO) which mostly targets the context at destination and provides information on several dimensions (e.g., administrative, cultural) and training on soft skills (e.g., communication in the workplace). In addition, trainings on occupation specific skills and other transversal skills to meet the position requirements are usually implemented.¹²

During the period abroad, support to and communication with participants together with monitoring of conditions and interim results help keep up with expectations. Integration support and assistance (e.g. logistical, administrative and social),¹³ as well as individual mentorship,¹⁴ or monitoring of the quality of mentorship provided by host companies,¹⁵ are examples of mechanisms implemented to facilitate integration at destination. In addition, the monitoring of conditions helps react to issues along the way, for instance if an employers' interim evaluation identifies the need for an additional training.¹⁶

These mechanisms facilitating both professional and personal integration have been implemented across all projects independently of types and length of mobility. Even for short term experiences as internship or studying abroad, they can significantly affect participants' satisfaction and outcomes.¹⁷

Return and reintegration support is also a significant component of the several pilot projects tested: for instance, supporting participants by communicating them throughout their job-seeking, providing training on soft skills (e.g., communication in the workplace, prepare your CV and job interview) and occupation-specific skills,¹⁸ as well as individual career and start-up counselling.¹⁹

Cross-border activities can also favour reintegration in the labour market at origin and spur interest in companies to participate in such programmes.²⁰ Companies, in fact, might be interested not

12. Under the PALIM project, training covered technical skills in the ICT sector, business management (e.g., determine a client's need), as well as soft skills (e.g. communication, working in teams) and language.

13. As under the Digital Explorers and PALIM projects.

14. As under PALIM and the Young Generation as Change Agents projects. In a German and Vietnamese pilot project concluded in 2016, specialist GIZ regional coordinators as well as Vietnamese-speaking mentors were provided to support both participants and employers.

15. For instance, under the HOMERe project offering internship.

16. For instance, under the IOM project between Belgium and Tunisia offering internship (Di Salvo & Ndoye, 2020).

17. In the IOM project between Belgium and Tunisia, the better the welcome received in the company at arrival and the more frequent the interactions with supervisors, the higher was participants' satisfaction with the overall programme as well as with experience gained and skills developed (Di Salvo & Ndoye, 2020).

18. As in the IOM project between Belgium and Tunisia, and the PALIM and Digital Explorers pilot projects.

19. As in the project for master's degree students between Spain and Morocco, even if reintegration activities have been heavily curtailed due to the COVID-19 situation in Morocco (Stefanescu, 2020).

20. The HOMERe project involved companies with subsidiaries in countries of origins that committed to consider employment opportunities for participants upon return.

only in hiring international talents, but also to generally internationalising their activities.²¹

Last but not least, raising awareness in the private sector at origin from the early stages of the project, for instance by showcasing results of previous experiences, can favour reintegration. Ideally, companies at origin would commit to hire participants upon their return from the launch of the mobility schemes.²²

The Global Skill Partnership model

When launching the TPs, the EC suggested adopting a “reinforced and more comprehensive approach” compared to that of existing schemes and in line with the GSP model. The GSP model aims to boost mutually beneficial international mobility by having countries of destination directly involved in creating human capital among potential migrants in the country of origin prior to migration (EC, 2020a).

Projects adopting the GSP model need to benefit countries of origin, countries of destination and participants. This means that to enhance human capital in a mutu-

ally beneficial way, activities should prioritise competencies that are in demand in both economies and that can improve labour market outcomes and integration of workers overall (ILO, 2018). In this respect, the GSP model takes an opposite approach compared to SMPs targeting occupations in surplus at origin and in shortage at destination.

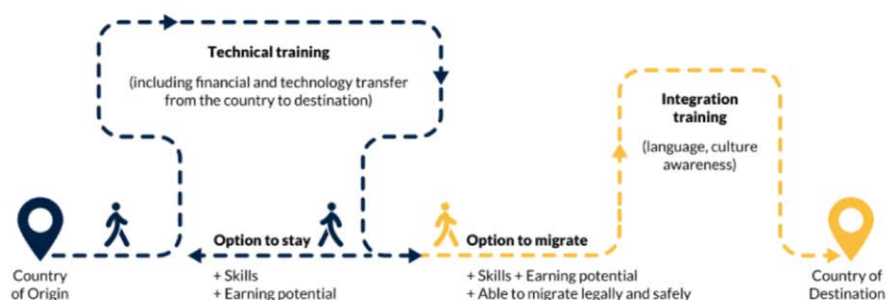
While countries of destination can get involved in training activities in several ways, bearing the cost is the main one. They can leverage on the arbitrage opportunity created by the lower training cost at origin compared to destination (Clemens, M., 2015).²³ Hence, beside getting workers with the right set of skills, countries of destination can create the potential to train more people than those possible at destination for the same money, thus contributing to human capital development at origin. This can be achieved in several ways: for instance, by establishing separate “tracks” for people aiming to work abroad and for those staying home (Clemens, 2015; Adhikari et al., 2021), especially if there are some specific requirements for the foreign labour market e.g., language and occupational-specific terminology.²⁴

21. Eagerness to internationalise was one of the major drivers for companies’ participation in the Digital Explorers project, behind support with administrative procedures of international hiring (Stefanescu, 2020).

22. The IOM project between Belgium and Tunisia involved Tunisian companies interested in hiring profiles with international experiences from the very early stages of the project (Di Salvo & Ndoye, 2020). In the HOMERe project, instead, this was the case with subsidiaries of companies at destination.

23. Using the example of nurses, Clemens (2015) shows how training costs in Western Europe can be between five to eight times higher than in North Africa: at least \$14,000 in Morocco and Tunisia for a full three-year course of training in professional nursing, compared to between \$80,000 and \$100,000 in Germany or the UK. Large differences in wages further raise the total added value of the scheme. Overall, Clemens (2015) estimates that “three years of training a single nurse at origin followed by five years of service at destination can create US\$70,000–80,000 through the training cost differential and an additional US\$120,000–150,000 or more through the wage differential, with the total added value of the arrangement exceeding US\$200,000.”

24. Among the SMPs analysed, only the PALIM project fully implemented the dual-track approach by training more candidates than vacancies open under the project.

Figure 1. Dual-track approach under the GSP model

Source: Adhikari et al. (2021).

Training costs at origin can be directly borne by employers interested in hiring abroad or shared between private and public stakeholders at destination (Clemens, 2015). Cost-sharing between stakeholders at destination and origin is at the basis of the GSP model and it aims at involving the private sector more actively throughout the entire process (EC, 2018). This is all the more key, as private sector involvement has been identified as one of the key elements for the success of such initiatives and their potential to be scaled up (Stefanescu, 2020).

Hence, while the design of training will be tailored to occupations targeted and the needs of stakeholders involved, the core model based on a cost-sharing approach where countries of destination support the training at origin and train more people than permits available can be applied horizontally across different occupations and sectors.

Such an approach, however, entails a great deal of collaboration between all the relevant stakeholders, which should be based on a clear ex-ante agreement

on responsibilities, costs and benefits to be shared between origin and destination (Clemens, 2015). A stronger and broader collaboration among different stakeholders will be necessary also to monitor undergoing changes in the labour markets due to ongoing transformations, such as the green and digital ones, and to identify the emerging skills needs.

Skills for the future: a blurred picture

In a broader context of collaboration with international partners, TPs should be designed taking into account interlinkages with other policy trends that will affect future labour market needs. Climate change is certainly among the most relevant, with the EU aiming to decrease its emissions by at least 55% by 2030 and reach climate neutrality by 2050 (EC, 2019b; EC, 2021b).²⁵ The efforts to reduce GHG emissions are already affecting production processes worldwide, with some jobs being disrupted in the future, some created, and some that will become “greener” in terms of

25. These objectives have become obligations under the recently adopted European Climate Law (EC, 2021b).

tasks performed (OECD & CEDEFOP, 2014; UNIDO, 2021). Alongside the green transition, the digital one is also of utmost importance for the future labour force and its resilience to sudden shocks, as shown during the COVID-19 crisis. The twin transition is in fact among the main policies underpinning the Commission's proposal for a European Recovery Plan to tackle the socio-economic consequences of the COVID-19 crisis (Bianchi, 2020).

What is “green”?

While the concept of green economy was first formulated in 1989 in relation to sustainable development and further developed over different initiatives and declarations throughout the years, there is not yet an internationally agreed definition²⁶ (UN; Bianchi, 2020). Without a clear definition of green economy, both green jobs and skills remain rather vague concepts which are often misused as synonyms (Vidican Auktor, 2020; OECD & CEDEFOP, 2014; Bianchi, 2020). There are several reasons why coming up with a unique and straightforward classification of green jobs is not a trivial task:

- Sustainability encompasses a vast spectrum of actions which can shape jobs at different levels of production (e.g., industry, occupation);

- Green jobs can either be newly created jobs or existing ones that support the transition, and their classification as “green” can also depend on their position in the supply chain;
- What activities are to be considered “green” is not a universally shared concept (Vidican Auktor, 2020).

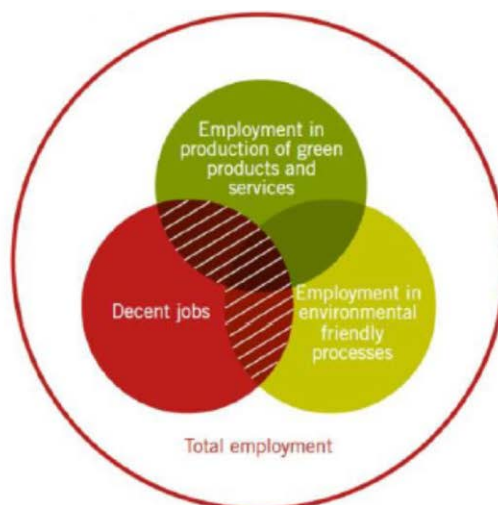
The International Labour Organization (ILO) definition of green jobs²⁷ is the most used (Bianchi, 2020; Vidican Auktor, 2020): “Green jobs are decent jobs that contribute to preserving or restoring the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency” (Figure 2). In other words, green jobs encompass both the production of goods that benefit the environment (e.g., green retrofit) and the processes aimed at enhancing sustainability (e.g., recycling system), while ensuring “decent” working conditions.

Uncertainty and lack of clarity around definitions can hamper cross-country comparison of needs and progress made: the analysis of regulations and policies related to green employment and skills in six EU countries²⁸ highlighted a lack of a “common approach to, and thus no definition of, green skills and jobs” (CEDEFOP, 2019).

26. The UNEP 2011 definition is amongst the most cited: “An economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive”.

27. For other definitions of green jobs, see Table 5 in Annex.

28. Denmark, Germany, Estonia, Spain, France and the United Kingdom (UK) (which was still an EU member state at the time of the report).

Figure 2. Green jobs - ILO definition

Source: ILO (2019).

The different countries' classifications rely on the four general approaches used to identify green jobs: products, process, industry or occupation. These approaches can be grouped based on their calculation method to define green jobs: products-, process- and industry-based approaches rely on an indirect method, while the occupation-based approach applies a mixed-method based on both literature review and data (Consoli et al. 2016). The key difference is that the indirect calculation method assumes full transferability of environmental properties from the industrial to the occupational level, thus disregarding different activities and tasks within the industry and production process (Bianchi, 2020).

The method developed by the United States (US) Department of Labour – the “Green Economy” programme within the O*NET database – is among the first us-

ing an occupational approach focusing on the activities and tasks that embed an environmental aspect (e.g., reducing pollution and GHG emissions, recycling materials, increasing energy efficiency) to define different types of occupations:

- existing occupations which will be increasingly in demand but will not require a significant change in their tasks (and therefore skills needed);
- existing occupations which will need to include new tasks or make existing ones increasingly more sustainable; and,
- new occupations deriving from new needs of the green transition.

Using the O*NET database, Vona et al. (2015) computed a level of “greenness” of each occupation based on the share

of green tasks performed, and then analysed the combination of necessary skills under the different tasks (i.e., green and non-green). Results show that the skill set required to face the green transition entails a mix of knowledge in specific scientific fields (e.g., physics, biology); in engineering and technical skills related to the design, construction and assessment of technologies; and in operation management and monitoring skills. While higher “greenness” scores (i.e., share of green tasks) are found in high-skilled occupations, green occupations identified by Vona et al. (2015) (either new or existing ones that are experiencing an increase in green tasks) are mostly present at the two extremes of the skills spectrum: high-skilled profes-

sionals or low-skilled manufacturing and production occupations.²⁹

These results are in line with the ILO’s findings: new green occupations will be limited in number and demand medium to high skills, while most of the effects of the green transition will require up- and re-skilling of existing occupations to face job relocation, especially for low-skilled occupations (ILO, 2019). ILO estimates report that by 2030, 25 million jobs will be created and seven million lost, of which however five million can be relocated to the same or similar occupations in other growing industries (ILO, 2019). Similarly, increasing automation and robotization of routine tasks will require efforts in up- and re-skilling of low-skilled

Table 1. Changes in skills required, by skills level of occupation

Skills level	Nature of change	Typical skill response	Example of occupations
Low-skilled occupations	Generic change, i.e., environmental awareness; simple adaptations to work procedures	On-the-job learning or short re-skilling and up skilling programmes	Refuse/waste collectors, dumpers
Medium-skilled occupations	Some new green occupations Significant changes to some existing occupations in terms of technical skills and knowledge	Short to longer up-skilling and re-skilling programmes; TVET courses	<i>New occupations:</i> wind-turbine operators, solar-panel installers <i>Changing occupations:</i> roofers; technicians in heating, ventilation and air conditioning; plumbers
High-skilled occupations	Focus of most new green occupations Significant changes to some existing occupations in terms of technical skills and knowledge	University degree; longer up-skilling programmes	<i>New occupations:</i> agricultural meteorologists; climate-change scientists; energy auditors and energy consultancy; carbon-trading analysts <i>Changing occupations:</i> building facilities managers; architects; engineers

Source: ILO (2019).

29. See Table 6 and Table 7 in Annex for examples of occupations by level of greenness and skills as identified by Vona et al. (2015).

workers to enhance their future employability (Gonzalez Vazquez et al., 2019).

The importance of cross-sectoral and transversals skills for the twin transition

Since the transition to a low-carbon economy will require changes across all sectors in terms of, for example, production processes, technologies, knowledge and attitude, its realization depends also on the degree of mobility of the labour force. Core and soft skills that are transferable across industries and increase the flexibility of the labour force will therefore become increasingly more relevant and confer a comparative advantage in the future (ILO, 2019), also in relation to the digital transition (Gonzalez Vazquez et al., 2019); Vidican Auktor, 2020). A focus on transversals skills can also help improve coordination and institutional integration among stakeholders from different policy areas (OECD & CEDEFOP, 2014).

At the same time, investment in technical skills and knowledge will be required to satisfy the requirements for specific occupations driven by environmental changes in public policy (e.g., carbon pricing, standards and regulations) (OECD &

CEDEFOP, 2014). In fact, differently from the ITC revolution, the transition to a low-carbon economy is significantly affected by changes in public policies and regulations, which then triggers technological and organisational changes (Vona et al., 2015). In a nutshell, the transition to a low-carbon economy will require a mix of skills specific to the green economy (i.e., driven by changes in policies across different areas) and transversal skills applicable across sectors.³⁰

Skills related to design thinking, creativity, adaptability and resilience, together with communication, working with others, planning and problem solving are the most mentioned as core soft skills that are transversal (Vidican Auktor, 2020, ILO 2019; EC, 2020b) (Table 2). These skills can also be categorized as non-cognitive skills and are considered of critical importance also to face the risk of automation in the future (Gonzalez Vazquez et al., 2019).

Digital skills are instead an example of technical but transversal skills, which increase workers' capacity to cope with ongoing changes as well as to find and keep jobs in the future, while driving the transition to a greener and digital economy (CEDEFOP, 2021).

30. In addition, the general transition towards a more sustainable society in environmental, social and economic terms implies not only an investment in skills for the world of work but also a more profound shift in terms of attitudes, knowledge and values related to sustainability at the educational level (Bianchi, 2020).

Table 2. Main core skills required for green jobs, by skills level of occupation

Required across the labour force	Required in medium- to high-skilled occupations
Environmental awareness and protection; willingness and capability to learn about sustainable development	Analytical thinking (including risk and systems analysis) to interpret and understand the need for change and the measures required
Adaptability and transferability skills to enable workers to learn and apply the new technologies and processes required to green their jobs	Coordination, management and business skills that can encompass holistic and interdisciplinary approaches incorporating economic, social and ecological objectives
Teamwork skills reflecting the need for organisations to work collectively on tackling their environmental footprint	Innovation skills to identify opportunities and create new strategies to respond to green challenges
Resilience to see through the changes required	Marketing skills to promote greener products and services
Communication and negotiation skills to promote required change to colleagues and customers	Consulting skills to advise consumers about green solutions and to spread the use of green technologies
Entrepreneurial skills to seize the opportunities of low-carbon technologies and environmental mitigation and adaptation	Networking, IT and language skills to perform in global markets
Occupational safety and health (OSH)	Strategic and leadership skills to enable policy-makers and business executives to set the right incentives and create conditions conducive to cleaner production, cleaner transportation

Source: "Skills for green jobs" country reports ILO (2018), from ILO (2019).

International cooperation on TVET to accompany the twin transition

TVET can help improve the matching between qualifications and evolving requirements of the labour market, and therefore provide the necessary support in terms of up- and re-skilling especially for low-skilled workers. As for international hiring, international PPPs can be an effective tool also when it comes to improve TVET systems.

The VET Toolbox launched jointly by the EU and different European development agencies in 2018, for instance, is a holistic initiative that provides support in formulating and implementing VET reform programmes in partner countries through technical assistance, funding for innovative projects, and developing and sharing knowledge.³¹ Most importantly, it does so by targeting three aspects that are key to accompany the twin transition as well as for the development of new pathways

31. The project is co-funded by the EC (EUR 15 million) and the German Government (EUR 500,000). For more information, see: <https://www.vettoolbox.eu/en/we-are>

for labour migration: labour market intelligence,³² stimulating private sector engagement, and ensuring inclusiveness of disadvantaged and vulnerable groups. Labour market intelligence and private sector engagement facilitate the identification of current skills needs and anticipation of emerging ones, thus supporting both the green and digital transitions as well as favouring international skill-matching. Inclusiveness of disadvantaged groups supports the relocation of low-skilled workers towards growing industries while providing qualifications and recognitions that can favour international mobility.

The Bridging Innovation and Learning in TVET (BILT) project launched in 2019 by UNEVOC, the International Centre for Technical and Vocational Education and Training of UNESCO, also leverages on international cooperation to improve TVET systems.³³ The project's main aim is to foster partnerships and peer learning among TVET stakeholders to identify the future-oriented qualifications and competencies necessary to face the skills demand created by global trends. Specifically, the BILT platform develops on four work streams: Digitalisation, Greening, Migration, and Entrepreneurship (Figure 3).

Figure 3. BILT work streams to define New Qualifications and Competencies in TVET



Source: The Bridging Innovation and Learning in TVET (BILT) project.

32. Labour market information describes the condition of the labour market, past and present, as well as future projections. Labour market intelligence refers to labour market information that has been analysed and interpreted before presenting it to the public. Essentially, most careers information is labour market intelligence. <https://www.cedefop.europa.eu/en/tools/resources-guidance/toolkit/what-is-labour-market-information-for-lifelong-guidance>

33. <https://unevoc.unesco.org/bilt/About+BILT>

The project places multi-stakeholder co-operation at its core, with the demand and supply for the identification of new qualifications being “closely interlinked and composed of co-dependent actors and processes”: the private sector supporting the identification of emerging trends on the demand side, and, on the supply side, the national TVET systems, together with BILT partners, modulating approaches to integrate new qualifications and competencies into national systems.³⁴ Four different approaches are defined in line with the types of new skills and competencies identified: cross-cutting, sector-specific, occupation-specific, modular (Table 3). Such a multilevel approach allows to face the different effects that the twin transition will have on different segments of the labour force.

Table 3. Approaches to the integration of new qualifications and competencies into TVET, BILT project

Approach	Relevance	Example
Cross-cutting	Transversal competencies relevant to all groups of learners in all curricula and training regulations of a TVET system	Applying sustainability in all work-related activities (recycling, reducing waste, improving energy and resource efficiency, climate literacy, etc.)
Sector-specific	Competencies relevant for all TVET curricula and training regulations of one economic sector (e.g., construction, logistic, service sector)	Optimising transportation routes in the logistic sector (considering carbon emissions, energy efficiency, cost reduction, etc.)
Occupation-specific	Competencies relevant for one specific occupation in occupational-based TVET curricula and training regulations	Operating, repairing and maintaining electric vehicles (assembling electrical machines, setting up and maintaining automation systems, etc.)
Modular	Introduction of additional qualification modules by TVET providers covering cross-cutting, sector-specific or occupation-specific competencies. These modules can complement initial and continuing TVET and allow a quicker response to new developments at the local level.	

Source: The Bridging Innovation and Learning in TVET (BILT) project.

34. <https://unevoc.unesco.org/bilt/BILT+-+New+qualifications+and+competencies>

Different examples of international cooperation on TVET exist also at bilateral level: Germany, for instance, is involved in several projects tailored to third countries' labour market needs.

Between 2016 and 2019, training in the field of water and energy efficiency was provided to tackle skills-mismatch for technically skilled labour in the construction sector in Jordan. Job-specific qualifications and competencies were targeted alongside those related to water and energy efficiency. The private sector was actively involved in the training and integration of participants in the labour market; moreover, its cooperation with different public stakeholders, especially in the area of TVET systems, helped define and test training programmes oriented to the needs of the labour market.³⁵

Similarly to the BILT project, a multi-level approach is used to define training modules tailored to different skills needs as well as skills level of participants. Participants in fact were both skilled workers, semi-skilled workers, and craftspeople, and training programmes were defined either as short- or long-term:

- short-term programmes for technicians, engineers and supervisors for water network maintenance, photovoltaic (PV) installation and maintenance and domestic electrical installation; and

- long-term programmes for plumbing, solar heating and PV installation and maintenance.

PPPs are also implemented under the Skills Development for a Green Economy II (SD4GE II) project³⁶ launched in 2018 with South Africa for electricians and plumbers, identified as being occupations in shortage. The project adopts a dual training approach combining theoretical and practical training in public TVET institutions with structure learning at the workplace, and both responsibilities and costs related to training are shared between government and industry.³⁷

In Nigeria, cooperation under the Skills Development for Youth Employment (SKYE) project³⁸ focuses on both the construction and agriculture sectors as well as the occupational fields of industrial mechanics, and it is primarily directed at unemployed or underemployed youths aged between 15 and 35 years old. Once again PPPs and dialogues on TVET are promoted under the project.

These experiences show how international cooperation fostering PPPs can be effective in formulating and implementing training, and can provide a high degree of flexibility in adapting training modules to different contexts (e.g., labour markets and sectors) and needs (e.g., cross-cutting or occupation-specific skills). Most

35. Promotion of training to improve efficiency in the water and energy sector II in Jordan. <https://www.giz.de/en/worldwide/24677.html>

36. Skills Development for a Green Economy II (SD4GE II). <https://www.giz.de/en/worldwide/35089.html>

37. What is the Dual System Pilot Project (DSPP)? <https://www.skills-green-economy.org/en/article/61.lessons-learnt-introduction-to-the-factsheets.html>

38. Skills Development for Youth Employment (SKYE) project. <https://www.giz.de/en/worldwide/72119.html>

importantly, they are also examples of successful integration of “green” skills and competencies in training modules. Hence, lessons learned from this type of projects can be relevant in the broader context of TPs if common needs are targeted: for instance, training technically skilled workers in the construction sector, with a dedicated focus on water and energy efficiency.

Current and future needs in the EU

This section analyses data on most mentioned skills in online job vacancies to reflect present needs of the private sector and identify the role of skills relevant for the twin transition. Data by occupation shows the possible differences and similarities in terms of specific skills needs. Finally, forecasts of job openings by 2030 complement the analysis to shed some light on how skills needs could evolve depending on occupations’ future growth in the EU.

Most demanded skills

Between July 2018 and December 2020, the Skills Panorama project from CEDEFOP collected and analysed more than 100 million online job vacancies implementing extensive data cleaning and processing to gather information on most mentioned skills, knowledge and attitudes.³⁹ Statistics on most mentioned skills show a mix of technical and core skills that are becoming increasingly relevant to accompany the twin transition (Figure 4). Skills are categorised follow-

ing the ESCO classification and presented at the second level of the hierarchy. For instance, “Business and Administration” includes nine sub-groups of skills, as for instance “management and administration”.⁴⁰

The importance of core soft skills is clear, with “Adapt to change” being the most mentioned skill and others such as “Working with others”, “Providing information and support to people”, “Solving problems” and “Dealing with uncertainty” ranking in the top ten. These skills reflect the increasing need of having a labour force that is resilient to change and that is therefore capable of facing new challenges before unforeseen, which are inherent components of the ongoing twin transition. Information and Communications Technology (ICT) and digital skills, in fact, constitute the second main skill cluster within the ten most mentioned skills: besides the general “ICT” skill, vacancies often require “Accessing and analysing digital data” and “Using digital tools for collaboration, content creation and problem solving”.

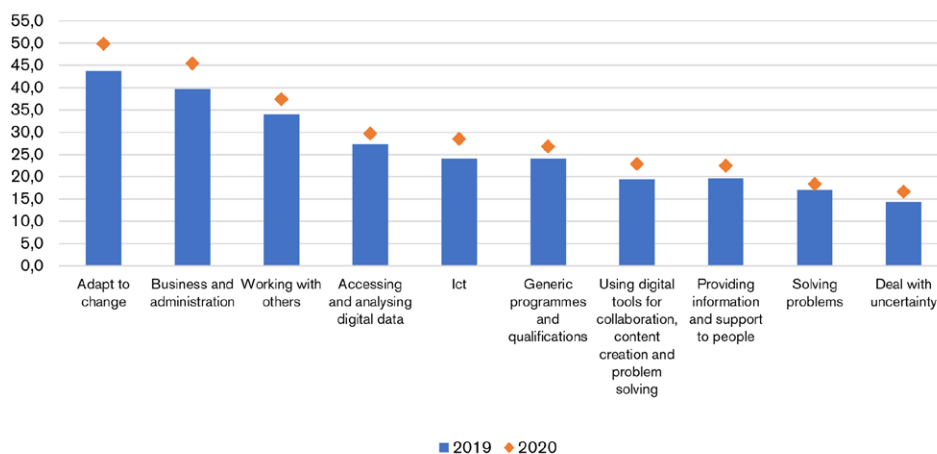
Interestingly, the use of digital tools is requested in relation to some of the soft skills listed: for instance, to increase collaboration (i.e., working with others), to create content (i.e., providing information to people) and for problem solving.

“Business and administration” and “Generic programmes and qualifications” complete the top ten. “Business and administration” encompasses different skill

39. https://skillspanorama.cedefop.europa.eu/en/dashboard/skills-online-job-advertisements?country=EU27_2020&occupation=&year=2020#1

40. <https://ec.europa.eu/esco/portal/skill?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fiscfd-f%2F041&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/iscfd-f/041>

Figure 4. Top ten most mentioned skills in online vacancies in the EU27 - % of vacancies mentioning a skill



Source: Prepared by the author based on CEDEFOP - Skills Panorama – ICT.

sets, with “management and administration” being the largest and defined as “the study of planning, directing and operating the functions and activities of organisations and institutions.” This seems to be in line with findings from Vona et al. (2015), who identify organisational and managerial skills as one of the four main groups of green skills, and the only one without a strong analytic and technical content and with an overlap with the non-routine skills that complement ICTs. “Generic programmes and qualifications” instead are those providing fundamental and personal skills, covering a broad range of subjects and therefore transferable across occupations and industries.⁴¹

Finally, while all top ten skills saw an increase between 2019 and 2020, “ICT”,

“Using digital tools” and “Dealing with uncertainty” report the largest percentage growth, thus possibly being impacted by the COVID-19 crisis with its increase in remote working and a general acceleration of transformations in the workplace.

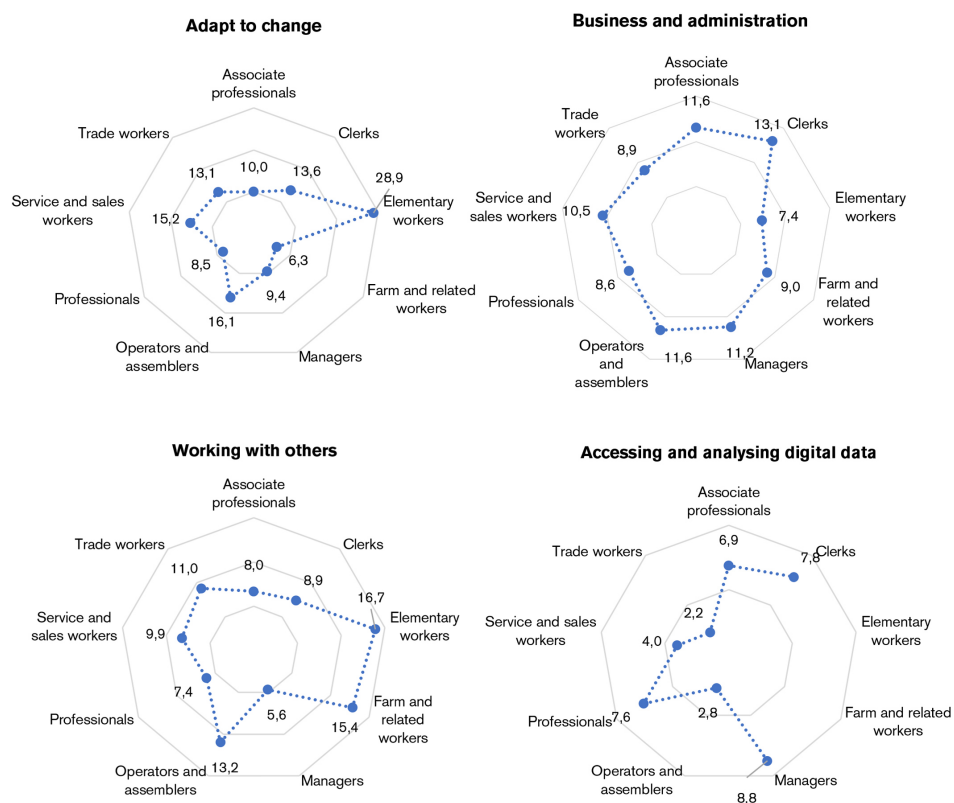
While these skills are relevant across the entire economy, their role might differ across occupations. In Figure 5, the radar chart shows the share of vacancies for each occupation that mention a specific skill, with each circle representing a 5% share. The core soft skills are requested in all nine broad occupations, but, while some are more horizontal, others report considerably higher mentions for specific occupations. For instance, “Adapting to change” is mentioned at least in 6% of vacancies of each occupa-

41. <https://ec.europa.eu/esco/portal/skill?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fiscfed-f%2F000&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/iscfed-f/000>

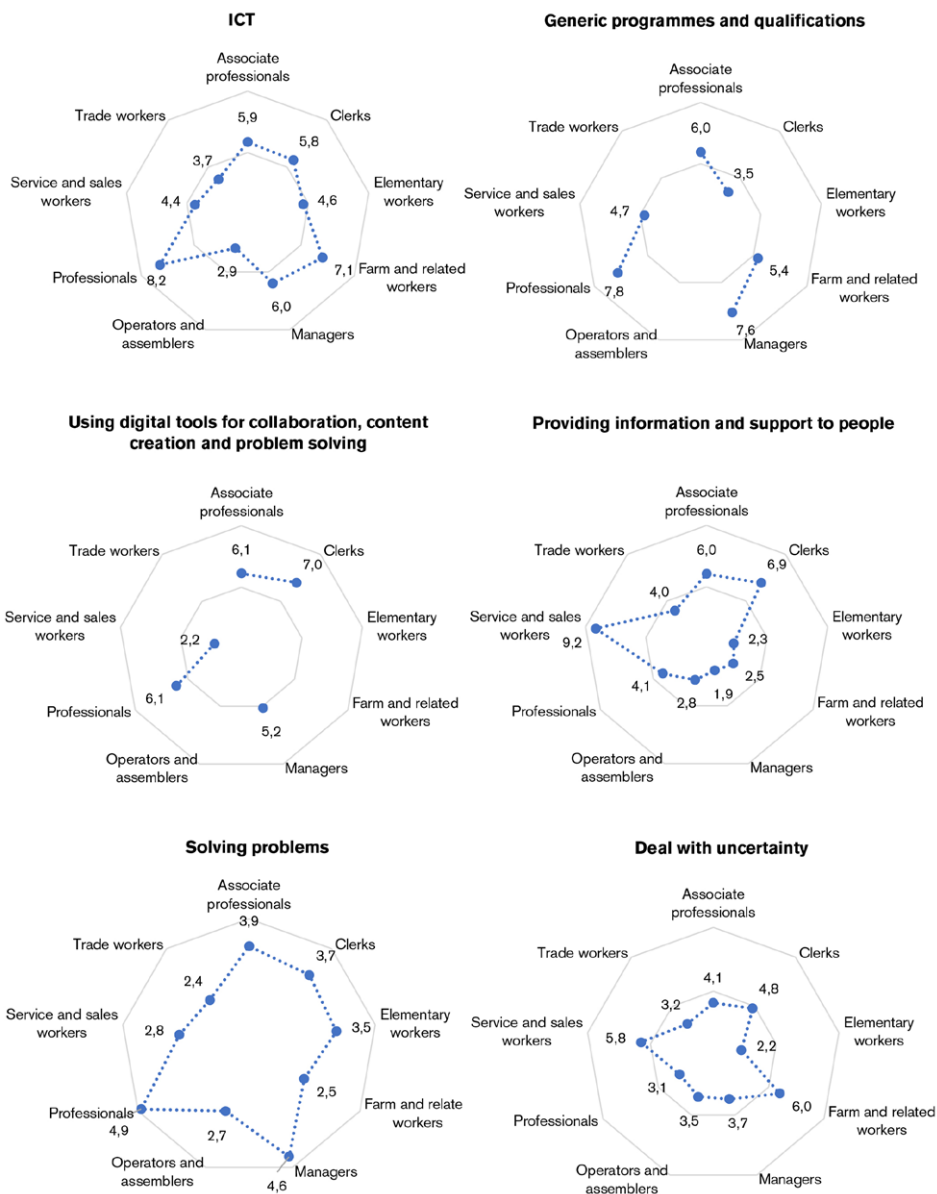
tion, but the share goes as high as 28.9% for Elementary workers, the only low-skilled occupation among the nine broad groups.⁴² Similarly, “Working with others” is more requested for Elementary workers (16.7%) and Farm and related workers (15.4%), while “Providing information to people” is associated with Associate professionals (6%), Clerks (6.9%) and Service and sales workers (9.2%). “Solving problems” and “Dealing with uncertainty”, instead, report a more homogeneous distribution across occupations.

The other two skills mentioned across all nine broad occupations are “Business and administration” and “ICT”, once again highlighting their importance as transferable knowledge across occupations and sectors as well as for ongoing shifts in production: the highest share for ICT in 2020, for instance, is recorded for Farmer and related workers, hinting at the growing importance of new tasks in agriculture (e.g., precision farming, water management).

Figure 5. Top ten most mentioned skills in the EU27 in 2020 - % of vacancies mentioning a skill by occupation



42. The occupations listed follow the ISCO-08 classification broad groups, which can be classified at broad skills level as High, Medium and Low. <https://ilostat.ilo.org/resources/concepts-and-definitions/classification-occupation/>



Source: Prepared by the author based on CEDEFOP - Skills Panorama.

Future occupational needs

Forecasts on job openings by occupations in the EU27 by 2030 can help understand how current skill needs might evolve in the medium term (Figure 6).

Six of the nine occupations are projected to grow by 2030, with the three high-

skilled occupations recording the highest share of new jobs created in total future job openings: 20% (i.e., 4.1 million) for Professionals, 18.7% (i.e., 3.3 million) for Associate professionals and 17.6% (i.e., 1 million) for Managers. The picture is mixed for medium-skilled workers, with a small increase for Service and sales workers and Operators and

assemblers and, instead, job losses for Trades workers, Clerks and Farm and related workers. Elementary workers, the only low-skilled group, instead, sees an expansion of 590,000 new openings across the EU by 2030, which, together with the replacement need, place it as the fourth most needed occupation in terms of total job openings.

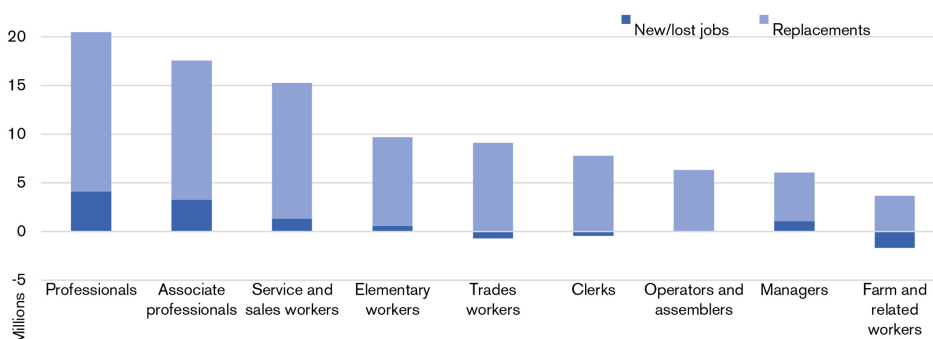
However, while it is important to look at newly created jobs to understand how the labour market is changing in terms of growing occupations, it is key to keep in mind that new openings and replacements will both require a set of skills fit for the twin transition. Moreover, with the ongoing demographic decline and population ageing in the EU, it will become increasingly more difficult to satisfy replacement needs, which make the most of future job openings.

Looking at the top three occupations in terms of overall future job openings (i.e., Professionals, Associate professionals

and Service and sales workers), they all report “Adapt to change” and “Business and administration” as the two most requested skills in 2020 online job vacancies, with “Working with others” being the third one most mentioned but for Professionals for whom ICT is more relevant (Figure 5). Similarly, “Adapt to change” and “Working with others” are the top two for Elementary workers (fourth occupation for total job openings by 2030), while “Adapt to change” and “Business and administration” are the top two skills in 2020 for Managers, projected to be one of the highest growing occupations by 2030 in terms of newly created jobs.

While these figures can give a general grasp on the future developments of occupational and skills needs in the EU by 2030, significant differences can exist at country level (see Figure 14 in Annex) as well as within narrower occupational levels. Moreover, skills most mentioned today in online job vacancies might still represent only a part of the skills that will

Figure 6. Number of job openings in the EU27 over the period 2020-2030, broken down by replacements and new/lost jobs



Source: Prepared by the author based on CEDEFOP - Skills Panorama.

be in demand in the future due, for instance, to new technologies and further shifts driven by environmental regulations.

It is therefore important to monitor growing needs in terms of new skills while continuing to invest in the core soft skills as well as digital ones that are increasingly in need today and that have a comparative advantage in terms of transferability across occupations and industries. In this respect, the development of classifications and statistics will become increasingly important: the updated ESCO classification⁴³ of occupations and skills including a revised transversal skills hierarchy reflecting changes due to the twin transition is a valuable example of tools providing granular information by adopting innovative techniques (e.g., artificial intelligence) to monitor evolving labour market needs.

The Euro-Mediterranean context

As reported in section pp.16-19, the effect of the green transition in terms of job creation and disruption is heterogeneous across the skill-spectrum of the labour force, with low-skilled workers being those most subjected to reallocation, especially in developing countries (Vidican Auktor, 2020).

Hence, while the long-term impact of the transition to a green economy on global employment is expected to be neutral

or at most somewhat positive, its effects will likely be unevenly distributed across regions, with some exposed to possible net job losses by 2030, such as the Middle East and North Africa (Vidican Auktor, 2020; Gençsü et al., 2020). Aside from the composition of the labour force, countries might differ on other dimensions relevant to the twin transitions, such as educational level, quality of education and training, as well as progress in terms of environmental technologies, energy efficiency and emissions (ETF, 2021; Choucair-Vizoso et al., 2021).

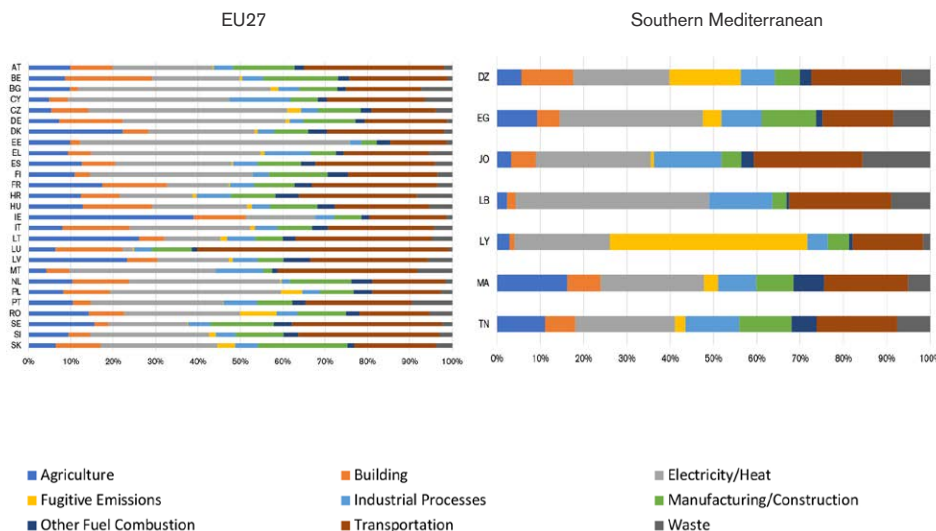
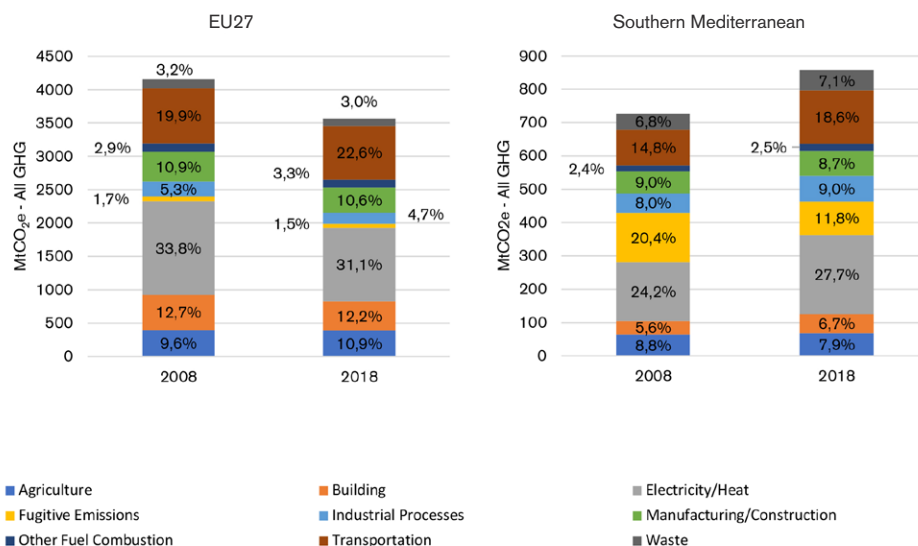
GHG emissions and employment structure

Evolution of GHG emissions and their composition in terms of contributing activities can help identify specific areas of improvement as well as for future intervention. Between 2008 and 2018, GHG emissions decreased by 14.2% in the EU27, while they increased by 17.8% in Southern Mediterranean countries (Figure 7).⁴⁴ Looking closely at the major contributors, the EU27 significantly reduced those emissions due to the production of Electricity and Heat (-21.2%), Building (-17.4%) and Manufacturing and Construction (-16.4%). Emissions due to Transport, the second contributor, decreased only by 2.4%, similarly to Agriculture. Instead, among countries in the Southern Mediterranean, Transportation is the area that experienced the highest emissions' growth (+47.8%), followed by Building (+40.2%) and Electricity and Heat (+34.7%).

43. <https://ec.europa.eu/newsroom/empl/items/727272/en>

44. Whereas GHG emissions have decreased for all activities in the EU27, only fugitive emissions reported a reduction in the Southern Mediterranean while still representing one of the major contributors in 2018, due mostly to Libya and in part Algeria.

Figure 7. GHG emissions composition by economic activity, 2008-2018



Source: Prepared by the author based on Climate Watch – CAIT.

Note: MtCO₂e stands for “Metric tons of carbon dioxide equivalent”, where the unit “CO₂e” represents an amount of a GHG whose atmospheric impact has been standardised to that of one unit mass of carbon dioxide (CO₂).

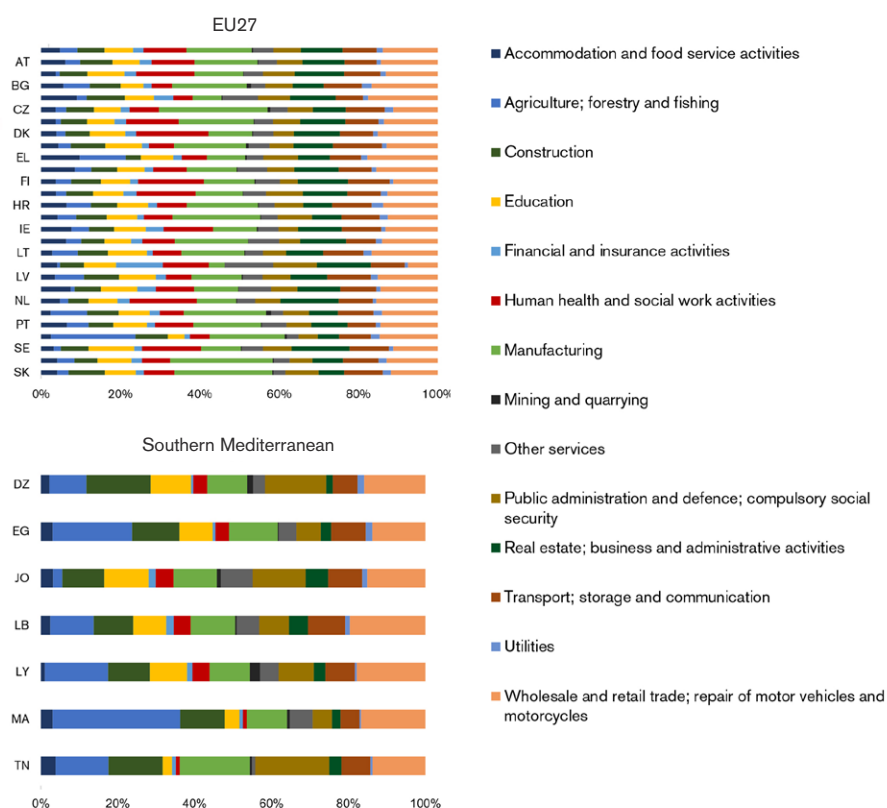
Transports therefore represents one of the main areas for future interventions on both sides, while the EU's experience in decreasing emissions due to Electricity and Heat, and Building, can help identify best practices to share with partners. Differences at country level can also favour the clustering of partners based on more aligned needs and interests.

Interlinked with contribution to emissions is the distribution of employment across economic activities. Agriculture and Construction are two key sectors of employment in Southern Mediterranean countries, each covering at least 10% of

the labour force in almost all the countries within the region⁴⁵ (Figure 8).

While these two sectors account for a smaller share of the EU labour force, their contribution is still significant, with Agriculture reaching 4.4% and Construction 6.8% overall. Given their importance for the green transition and their role in terms of employment, these are two sectors where further collaboration between partners should be explored across the different policy areas, from development of new technologies and their applications for sustainability, skills creation and upgrade, and labour migration.

Figure 8. Employment distribution by economic activity, 2019



Source: Prepared by the author based on ILOSTAT – ILO modelled estimates.

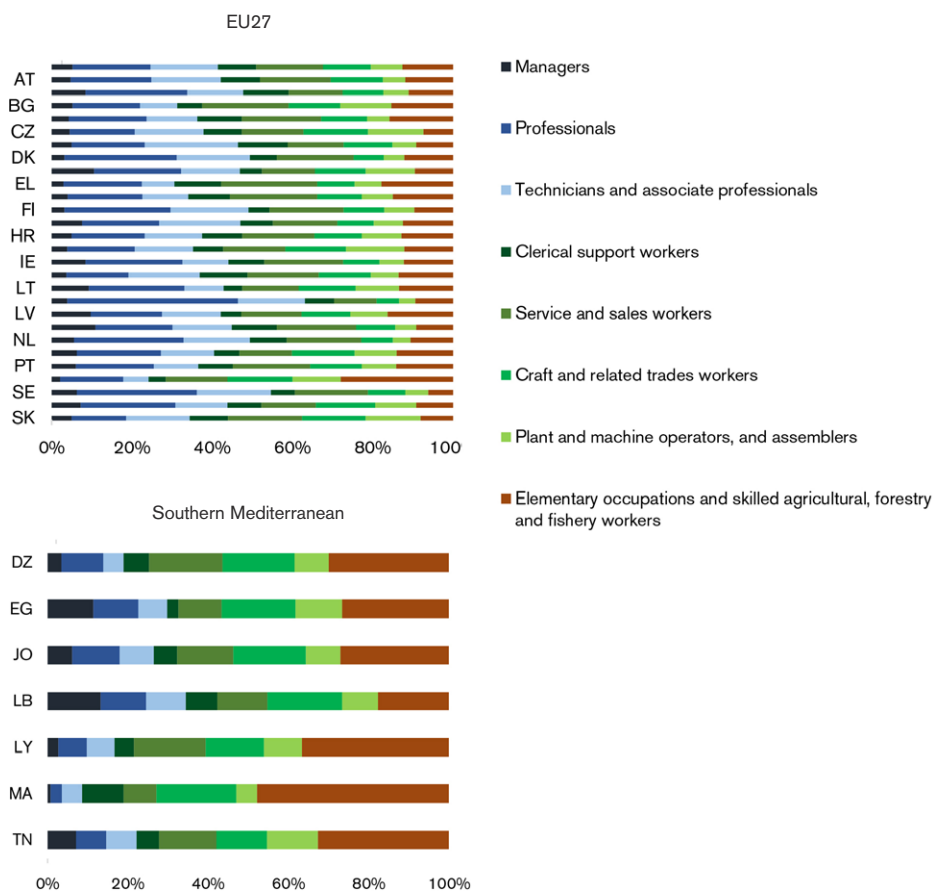
45. Jordan is the only one with less than 10% of employment in Agriculture (only 2.5%).

At occupational level, elementary workers, skilled agricultural workers, and craft and related trade workers, are the main profiles employed in agriculture and construction. These occupations have low to medium-skills and will therefore need up- and re-skilling training to face the effects of the twin transition. Moreover, these occupations currently account for around 45 to 50% of the entire labour force in Southern Mediterranean countries (Figure 9), thus increasing the incentives for collaboration on up- and

re-skilling beyond the agriculture and construction sectors.

Given their wide implications for sustainability and for interconnected industries in the value chain, other sectors such as transportation and energy could be targeted by TPs aiming at developing human capital. For instance, low- to medium-skilled occupations in the manufacturing of related industries, such as in the automotive industry or production of energy technology, will be exposed to the twin transition and need up- and re-skilling.

Figure 9. Employment distribution by occupation, 2019



Source: Prepared by the author based on ILOSTAT – ILO modelled estimates.

Education and training

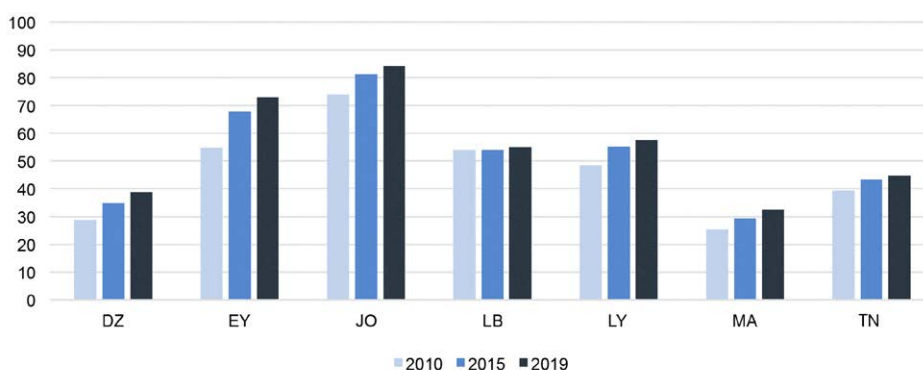
In line with the distribution of employment across economic activities and occupations, Southern Mediterranean countries differ also in terms of education level (Figure 10). In Algeria, Morocco and Tunisia less than half of the population aged over 25 reached secondary education in 2019, while Egypt and Jordan are near or above the 75% level, and Lebanon and Libya sit at around 55%.

Looking at key competences for the future in terms of the twin transition, the level of underachievement in fields such as mathematics and science can be three to four times higher in partner countries than in the EU (Figure 11 a), where the share of students aged 15 underachieving in mathematics (science) was 22.4% (21.6%) in 2018 (Badescu, 2020).

Significant variation can be found also in terms of tertiary graduates in the STEM (Science, Technology, Engineering and Mathematics) faculties, ranging from 11.2% in Egypt to 43.3% in Tunisia (Figure 11 b). Moreover, as the share of tertiary students graduating in STEM increases, the divide between women and men does too: in Algeria and Tunisia, 40.3 % and 56.3% of tertiary educated men are in STEM compared to 30.9% and 36.5% of women.

Without concrete employment opportunities, however, education alone is not enough: for instance, while Jordan reports among the highest share of population aged 25+ with at least some secondary education, the same population group registers unemployment rates at 12.7%, at the same level as Tunisia (whose share of population with at least some secondary education is almost half that of Jordan)

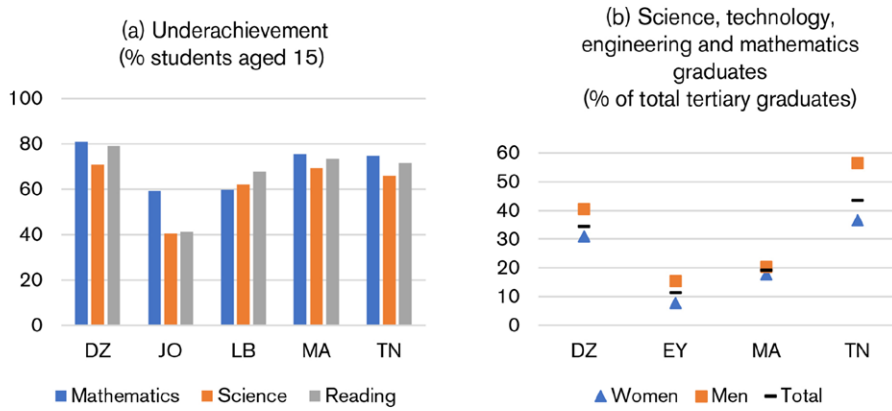
Figure 10. Population with at least some secondary education, % aged over 25



Source: Prepared by the author based on data from UNDP - Human Development Data Center.

Note: Indicator under the Education dimension of the Human Development Index, relevant for the SDG 4.4 "By 2030, substantially increase the number of youths and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship." The indicator also covers people that have reached the secondary level of education, even if they have not necessarily completed it.

Figure 11. Underachievement and STEM graduates, 2018*



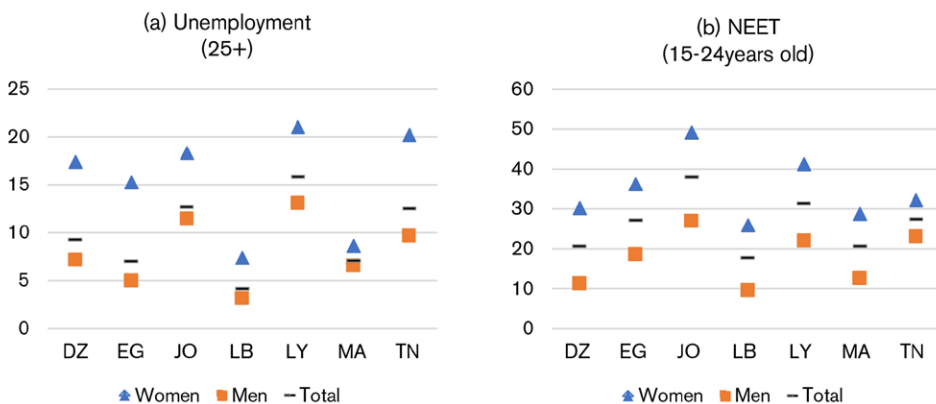
Source: Prepared by the author based on data provided by Badescu (2020).

Notes:* Underachievement: 2015 figures for DZ and TN; STEM: 2016 figures for EY and 2017 for MA

and just behind Libya (Figure 12 a). Poor employment performance, despite higher educational levels, may even discourage people from pursuing education at all: the share of young people not in education,

employment or training (NEET) (Figure 12 b) in countries in the Southern Mediterranean ranges between 20% and 40%, which is considerably higher than the 9% EU average.⁴⁶

Figure 12. Unemployment rate and share of NEET, 2019



Source: Prepared by the author based on data from ILOSTAT.

46. See Figure 15 and Figure 16 in Annex for EU27 data on Unemployment and NEET.

Differences between women and men are also more pronounced in partner countries. Special attention should therefore be given to the gender dimension, in order to ensure that the twin transition creates decent jobs and opportunities for everyone instead of further exacerbating divides.

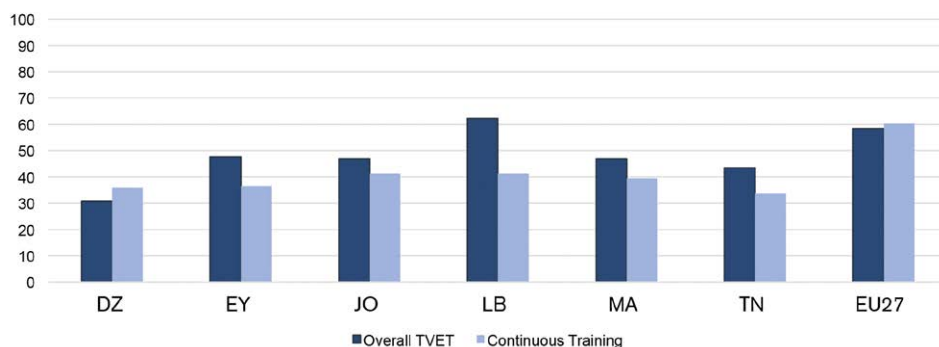
Last but not least, quality of TVET also varies among partner countries. The TVET component of the Global Knowledge Index for EU countries⁴⁷ is, on average, 58.4 out of 100, compared to an average of 46.3 in Southern Mediterranean countries, with Lebanon and Algeria reporting the highest (62.2) and lowest (30.7) scores respectively (Figure 13).

However, the difference gap between the EU and Southern Mediterranean countries is almost twice as large when looking at the component Continuous Training, which captures life-long learning, a key element for the mobility of the labour force across sectors and the growing need for up- and re-skilling to face the twin transition.⁴⁸

Conclusions and policy recommendations

Economies and labour markets worldwide are progressively being affected by several global trends, such as the green and digital transitions. While their overall

Figure 13. Quality of TVET - Global Knowledge Index 2020



Source: Prepared by the author based on data from the United Nations Development Programme (UNDP) and Mohammed Bin Rashid Al Maktoum Knowledge Foundation (MBRF) - Global Knowledge Index.

Notes: Technical vocational education and training (TVET) is one of the six components of the Global Knowledge Index (GKI). Each major component of the GKI, like TVET, is built on other subcomponents at different levels, such as Continuous Training, which is part of the Formation and Professional Training subcomponent of TVET.

47. See Figure 17 in Annex for EU27 countries figures.

48. The EU average is 60.2 compared to 38 in Southern Mediterranean countries. See Figure 17 in Annex for EU countries figures.

effects in terms of job creation are estimated to be somewhat positive, they will differ across skills levels and the specific context of a country (see pp.16-19). In such a fast-changing world of work, future labour migration programmes should take a holistic approach encompassing different policy areas relevant for these transitions (e.g., education and training, research).

By proposing and developing the concept of Talent Partnerships, the EU seems to be moving in this direction, by favouring collaboration in human capital development between countries of origin and destination, as suggested under the Global Skill Partnership model (see pp.14-15). Leveraging on the cost arbitrage between countries, destination countries can subsidise training at origin and develop the necessary skills at a much lower cost, thus freeing additional resources to train more people than permits available through a dual track training system with a “home” and an “away” track. The other main principle behind this approach, therefore, is that skills and competencies to be developed are in demand in both economies. Potentially, the model is scalable to include several countries of destination as well as of origin to further leverage on possible synergies among labour markets, especially those of neighbouring countries. Supporting human capital development in a region rather than a single country of origin can lead to further positive spillovers: for instance, participants who followed the “home” track might be able to exploit migration opportunities in neighbouring countries in the future.

As learnt from pilot projects, a thorough assessment of skills needs during the pre-departure stage is essential for a correct matching between demand at destination and supply at origin (see

pp.10-14). It becomes even more important when the goal is to increase human capital at origin by training more people than permits available (e.g., dual tracks system, “home” and “away”), as well as to facilitate reintegration upon return. With respect to global transitions, monitoring of emerging needs from the private sector and requirements from regulations can support the identification of new skills that should be covered by education and training.

Access to information is at the core of skills needs assessment and anticipation, but sources are multiple and with different scopes and limitations, e.g., online vacancies, socio-economic surveys, registries from PES (EC, 2020b). In the specific context of the green transition, lack of commonly agreed definitions and methods to identify “green” occupations and skills hampers comparability of information and analysis of emerging trends (see pp.16-19). Without dialogue and coordination among different stakeholders, skills assessment and anticipation become close to impossible: stakeholders provide input in terms of data and understanding of new requirements, complement each other’s activities and support validation of results, and favour the design of new strategies to identify skills needs and improve skills matching (ILO, 2015; EC, 2020b).

Multi-stakeholder cooperation of a public-private nature was in fact implemented in all the projects reported, both in the field of legal migration and to enhance TVET systems.

Besides the identification of skills needs, multi-stakeholder cooperation has been effective in facilitating compliance with procedures linked to international hiring (i.e., visa applications), supporting integration at destination by monitoring

working conditions and interim results, and favouring reintegration in the labour market of the origin country (see pp. 10-14).

Ongoing communication and peer learning among stakeholders also helps improve TVET systems' capacity to identify the qualifications and competencies necessary to face the twin transition (see pp. 19-20). Employers' involvement and ongoing discussion with other partners (e.g., national TVET agencies, education and training institutions) is important to keep up with the evolving requirements. In the short term, they can also provide practical solutions tailored to specific needs: under a German project on energy and water efficiency of the construction sector in Jordan, companies were involved in the training of participants, as well as in designing training modules tailored to participant's skills level.

While specific hard and technical skills as well as education fields (e.g., STEM) will generally become more relevant for new occupations, the twin transition will require a relocation between industries to avoid job disruption, with transversal skills and knowledge becoming important to increase mobility of the labour force.⁴⁹ The literature identifies these transversal skills as a mix of both technical and non-cognitive skills, among which the most mentioned are related to adaptability and resilience, communication and working with others, planning and problem solving, digital and

ICT skills, and more in general business, operation management and monitoring (Vidican Auktor, 2020; CEDEFOP, 2021; ILO, 2019; Vona et al., 2015; EC, 2020b; Gonzalez Vazquez et al., 2019).

In the short term, some of these skills can more easily be developed than others. Skills development in the digital and ICT areas, for instance, can better exploit distance and online learning for both low and advanced skills.⁵⁰ Moreover, given the growing role of digital-natives in the working-age population, and the high degree of harmonisation in terms of competences and skills (e.g., programming languages) compared to other sectors (e.g., health professionals), the ICT sector is one of the most suitable to invest in TPs. It is not by chance, in fact, that most of the SMPs analysed focus, fully or at least in part, on the ICT sector.⁵¹ Among the pilot projects for legal migration, for instance, the PALIM project showed how training can be carried out in a reasonable period (120 days) also in presence and cover not only technical skills for the ICT sector, but also business management skills, language and soft skills (e.g., professional and interpersonal communication, working in teams).

Considering the medium- to long-term needs related to sustainability and the current structure of partner countries' labour force, agriculture and construction⁵² could be suitable sectors to start developing TPs on mobility and training with a dedicated focus on digital and

49. "Increasing STEM graduates and fostering entrepreneurial and transversal skills", Action 7 of the European Skills Agenda (EC, 2020b).

50. The Digital Education Action Plan of the Skills Agenda foresees an important role of online and distance learning for digital skills. See Action 8 (EC, 2020b).

51. See Table 4 in Annex for an overview.

52. "The increasing focus on the expansion of low-carbon technologies [in construction] globally could provide an opportunity to develop a Global Skill Partnership to develop "green" skills." Adhikari et al. (2021).

green skills. Given their contribution to GHG emissions (see pp. 29-32), in fact, these sectors are particularly relevant for the green transition: the Farm to Fork strategy,⁵³ for instance, is at the heart of the European Green Deal and encompasses the entire food chain; similarly, strong emphasis is placed on improving energy efficiency of buildings, with EUR 72.2 billion allocated from the Social Climate Fund to increase the use of renewables in heating and cooling to 49% by 2030.⁵⁴

Moreover, each of the two sectors employs, on average, 10% of the labour force in Southern Mediterranean countries, with low- to medium-skilled occupations important for these sectors, such as elementary workers, skilled agricultural workers, and craft and related trade workers, accounting for 45 to 50% of the labour force (see pp. 29-32). There is therefore potential to both overall reskill workers and build up competencies increasingly relevant for sustainability: for instance, precision farming, water efficiency, and organic farming for agriculture, or energy efficiency and PV installation and maintenance for construction. This is also important to expand opportunities for legal migration beyond highly-skilled occupations (such as in the ICT sector) and can thus be more inclusive and create stronger incentives for origin countries to participate in such schemes.

Finally, labour migration can be an important component for these sectors in the EU, as shown by the disruption and costs created by COVID-19.⁵⁵ Leveraging on seasonality for agriculture or short-term assignments for construction, programmes including both mobility and skills development could be designed through periodic rounds, combining more theoretical training at TVET institutions at origin with practical learning at the workplace at destination. Circular experiences could also help develop a range of core soft skills that, besides training, need hands-on practice in the workplace, such as business and operation management skills, communication and collaboration with others, as well as planning and problem solving. Finally, circularity would favour more periodic exchanges between stakeholders of both countries, as well as the monitoring of results and identification of actions to be taken.

By targeting common needs and improving skills assessment and anticipation systems, partnerships on mobility and skills-development can limit brain drain with enhanced human capital development at origin and improved skill matching both between and within labour markets of destination and origin countries. Design and areas of intervention would be tailored to the specific needs of the countries involved, but industries such as agriculture, construction, energy and

53. https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy_en

54. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en#renovating-buildings-for-greener-lifestyles

55. Agriculture was particularly hit for seasonal productions, halted by restrictions to mobility, even intra-EU. The predominance of small-sized enterprises in the agriculture and construction sectors also hampers their ability to attract young and qualified workers. Construction is one of the four sectors in the Pact for Skills, which targets activities heavily affected by the COVID-19 crisis and that are priority areas in the European Green Deal (EC, 2020b).

transport seem to be those most exposed to the green transition and of importance for both the EU and Southern Mediterranean countries. Moreover, if TPs can leverage on common needs also among different origin countries, these could benefit from human capital development in the region and thus from enhanced intra-regional mobility of trained workers.

With its diverging demographic trends and historical and commercial ties, the Euro-Mediterranean region provides a suitable context to start implementing partnerships that are mutually-beneficial and that encompass different policy areas beside labour migration, such as education and training, and investment in new technologies and sustainability. If the right incentives are created and concrete opportunities for labour (and possibly study) migration are offered, TPs can also lead to an increased cooperation in overall migration management from origin countries.

The new Agenda for the Mediterranean can be an ideal framework to develop this transversal cooperation with partner countries. The Agenda, in fact, has established a dedicated investment plan, places partnerships on strategic priorities such as the green and digital transition at its core, and proposes several actions to enhance human development through better education and skills assessment:

- The 2021-2027 digital education action plan;

- Platforms of Centres of Vocational Excellence (CoVE) to create local “skills ecosystems” and enhance reskilling;
- The anticipation of skills needs, and in the design and development of skills strategies in a lifelong learning perspective, with the support of the ETF for VET, skills and capacity development, including skilling for green jobs and the green economy (EC, 2021a).

While it is important to foster cooperation in all fields related to migration, opportunities for labour and study migration should be, from the start, thought in relation to the other main domains relevant to the green and digital transition, such as education and training. If these are developed within policy “silos”, they will be less effective in mapping the needs of stakeholders from all countries involved and in delivering results relevant both in the short term for mobility and in the medium to long term for the twin transition (Gençsü & Schweiger, 2021; EC, 2020b). Multi-stakeholder partnerships including both public and private actors should instead be favoured to improve skills assessment and anticipation mechanisms. The latter would help develop programmes of labour and study migration hand-in-hand with competencies, qualifications and training modules required by the transitions in both economies. In this respect, DG NEAR and development agencies play a key role in involving relevant stakeholders and coordinate cross-border cooperation.

Key Messages

- By addressing common skills needs and leveraging on differences in training costs, TPs based on the GSP model can lead to mutually-beneficial migration schemes between origin and destination countries.
- A framework supporting human capital development on shared skills needs can enhance opportunities and incentives for international hiring, employability in the labour markets of both destination and origin countries (i.e., “dual-track” training system), as well as responsiveness of education and training systems to new skills requirements.
- The twin transition will create new job opportunities in high-skilled occupations, but its effects will mostly lead to job relocation of low-skilled occupations, thus providing a great potential for common investment in up- and re-skilling activities. Besides the importance of technical skills and STEM competences, transversal skills (e.g., digital skills, business and operational management, working with others, and problem-solving) will help improve mobility between industries.
- Multi-stakeholder cooperation is key: it supports skill assessment and anticipation, defines training modules, and facilitates skills matching both between and within labour markets of partnering countries. Companies can provide inputs on current and changing skills needs, help define training and carry it out.
- Cooperation should be at all levels: macro (e.g., ministries), meso (e.g., industry associations, PES), and micro (e.g., companies, training providers). The new Agenda for the Mediterranean provides an ideal framework to enhance cooperation, with DG NEAR and development agencies playing a key role in involving and coordinating relevant stakeholders.
- Up-to-date data is necessary to identify needs, set objectives, monitor progresses and intervene to address shortcomings. Cooperation with partner countries should also target the development of statistics and of a taxonomy of skills for the green transition. Implementation of tools to offer guidance in CV-writing (e.g., the new Europass tool) or to identify and assess skills (e.g., the EU Skills Profile Tool) should be supported.
- Agriculture and construction each employs on average 10% of the labour force in partners in Southern Mediterranean countries, with low- and medium-skilled occupations relevant for these sectors accounting for 45-50% of the whole labour force. Labour migration can be important for these activities in the EU, also in relations to future replacements needs.

- TPs on migration and skills development with countries in the Southern Mediterranean could therefore be tested in these sectors, also given their key role for sustainability. Trainings carried out both at TVET institutions at origin and on-site at destination should include a mix of technical skills (e.g., precision farming and water efficiency or PV installation and energy efficiency), and of core soft skills (e.g., general digital skills and entrepreneurial skills). Under circular schemes, companies and industry associations at origin can further support the skills development of workers during periods of stay in the origin country, and the progressive integration in the local labour market.
- Other areas, such as energy and transportation, can also be targeted by TPs in the context of the new Agenda for the Mediterranean, due to their implications for interconnected industries and overall sustainability. Development of renewables, for instance, would support diversification of both energy sources and economic activities for countries heavily dependent on natural resources (e.g., Algeria, Libya). Manufacturing related to both industries would also be a suitable area of action, for instance in the automotive industry, or production of energy technologies (e.g., solar panels, LED bulbs).
- In the short term, the ICT sector can also be targeted by TPs as shown in several examples of SMPs in the past. The role of digital natives in the working-age population is growing in all countries, competencies are more easily recognised than in other occupations (e.g., programming languages for software developers compared to professional nurses' qualifications), and the sector can better exploit distance and online learning for both basic and advanced skills.
- Given high shares of youth NEETs and low shares of STEMs graduates, with significant divides between women and men, specific support should go to improve TVET systems in partner countries, for their relevance in providing re-skilling, recognising formal and informal qualifications, and reaching out to disadvantaged groups. Overall, efforts are necessary to improve educational outcomes in the region, given the low shares of population with at least some secondary education.

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Annex



Information on skills mobility projects

The information reported in the analysis refers to nine different projects implemented by several countries and agencies in the field of skills mobility:

- the four pilot projects implemented under the Mobility Partnership Facility: Digital Explorers, PALIM, HOMERe, and Young Generation as Change Agents, funded by the EU AMIF;
- two IOM projects: Enhancing Tunisian Youth Employability, funded by the Belgian government, and MATCH, funded by the EU AMIF;
- the THAMM project, which covers different aspects of migration governance, and includes national development agencies (ENABEL for Belgium and GIZ for Germany) and international organisations (IOM, ILO), funded by the EU Emergency Trust Fund for Africa; and
- two GIZ projects, the Triple Win and Training nurses.

The table below reports information on the main dimensions covered in the analysis, with specific figures when available, and further details and references in the notes to the table. The table follows a chronological order based on the starting date of each project.

Table 4. Comparison of skills mobility partnerships

	Training nurses	Triple Win (1)	Enhancing Tunisian outh Employment	Digital Explorers	PALIM (2)	HOMERE	Young Generation as Change Agents	THAMM (3)	MATCH
EU country	Germany	Germany	Belgium	Lithuania	Belgium	France	Spain	Belgium; Germany	Belgium; Italy; Netherlands; Luxembourg
Partner country	Vietnam	Bosnia and Herzegovina; Philippines; Tunisia; (Vietnam)	Tunisia	Nigeria	Morocco	Egypt; Morocco; Tunisia	Morocco	Egypt; Morocco; Tunisia; (Algeria, Libya)	Nigeria; Senegal
Start date	2012	2013 (2019)	Mar. 2018	Jan. 2019	Mar. 2019	May 2019	May 2019	Aug. 2019	Jan. 2020
End date	2016	Open-ended (2023)	Dec. 2019	Dec. 2021	Apr. 2021	Dec. 2020	Jun. 2021	Aug. 2023	Jan. 2023
Sector	Health	Health	ICT, construction, energy, food industry	ICT	ICT	ICT, blue economy, tourism, energy	Energy, biotech, tourism	Tourism, health, engineering, ICT	ICT, technology, communication, health, digitalisation, transport, food industry
Participant profile	Nurses	Nurses	Young graduates	Young ICT specialists (1-2 years' experience)	Young graduates	Students / Young graduates	Students	Working age	Young graduates
Type of placement	Job / TVET	Job / TVET	Internship	Job	Job	Internship	Study (Master's degree)	Job / TVET	Job
Length of placement	At least 12 months	At least 12 months	6 months	12 months	From 6 months to open-ended	Up to 6 months	12 months	Not specified	9 months to 2 years

	Training nurses	Triple Win (1)	Enhancing Tunisian youth Employability	Digital Explorers	PALIM (2)	HOMERE	Young Generation as Change Agents	THAMM (3)	MATCH
Number of participants	1 st round 100; 2 nd round 100	4,000 placed of which 2,700 already working (350)	31 (29 completed)	Up to 50	116 trained Up to 30 for mobility	250	100	129 legal migration; 162 VET (1)	200+
Training pre-departure	1 st round: 6 months language course A2 level; 2 nd round: 12 months language course at B2 level and technical module; orientation	12-month language course (general at B2 level and technical module); orientation	Pre-departure orientation	One week on practical tasks and learning sessions; three-days hackathon	120 days over 7 months (ICT, soft skills, English)	Preparation for the internship	Pre-departure orientation, language	Vocational training; language; pre-departure orientation	Pre-departure orientation; soft skills
Support and monitoring at destination	Individual mentorship; regional coordinators	Individual mentorship; regional coordinators	Logistical and administrative support; interim evaluations; soft-skills training	Logistical, administrative and social support	Logistical, administrative and social support; Individual mentorship	Monitoring companies' mentorship	Individual mentorship	Logistical, administrative and social support; training	Logistical and administrative support; training
Reintegration support	<i>Not specified</i>	<i>Not specified</i>	Individual follow-up, training	Network; training; individual career/start up counselling	Individual follow-up	Yes – stronger internship goal return	Individual career and start up counselling	Reintegration advisory services (e.g., Centres on Jobs, Migration and Reintegration)	<i>Not specified</i>

Notes:

(1) Vietnam was included in the project in 2019; information for Vietnam is reported in brackets;

(2) PALIM has been implemented as one of the four pilot projects under the MPF. However, it has now been extended to April 2023 under the THAMM project funded by the EU Emergency Trust Fund for Africa;

(3) Other EU countries can join the project, Belgium (with the second round of PALIM) and Germany are the only two present at the time of writing. Mobility schemes to be tested with Egypt, Morocco and Tunisia, while only improving migration governance in Algeria and Libya so far. Number of participants at time of writing 21 June 2021.

Sources: Training nurses (*Training nurses from Viet Nam to become geriatric nurses in Germany*): <https://www.giz.de/en/worldwide/18715.html>;

Triple Win: <https://www.arbeitsagentur.de/vor-ort/zav/uber-triple-win/triple-win-das-projekt>, <https://www.giz.de/en/worldwide/41533.html>, <https://www.giz.de/en/worldwide/80962.html>;

Enhancing Tunisian Youth Employability (*Enhancing Tunisian Youth Employability Through Vocational Apprenticeship and Professional Internship in Belgian Companies*): Di Salvo, M., Ndoye, N. (2020); https://belgium.iom.int/sites/belgium/files/Gallery/Factsheet%20Enhancing%20Tunisian%20Youth%20Employability_EN.pdf;

Digital Explorers: <https://mobilitypartnershipfacility.eu/what-we-do/actions-pilot-projects/digital-explorers>, <https://digitalexplorers.eu/>;

PALIM (*Pilot Project Addressing Labour Shortages through Innovative Labour Migration Models*): <https://mobilitypartnershipfacility.eu/what-we-do/actions-pilot-projects/pilot-project-addressing-labour-shortages-through-innovative-labour-migration-models-palim>; <https://sites.google.com/view/enabel-palim/home>;

HOMERe (*High Opportunity for Mediterranean Executive Recruitment*): <https://mobilitypartnershipfacility.eu/what-we-do/actions-pilot-projects/high-opportunity-for-mediterranean-executive-recruitment-homere>; <https://ufmsecretariat.org/project/homere/>;

Young Generation as Change Agents: <https://mobilitypartnershipfacility.eu/what-we-do/actions-pilot-projects/young-generation-as-change-agents>;

THAMM (*Towards a Holistic Approach to Labour Migration Governance and Labour Mobility in North Africa*): https://ec.europa.eu/trustfundforafrica/sites/default/files/t05-eutf-noa-reg-06_amendment_no-trackchanges.pdf;

MATCH: IOM (2021); <https://belgium.iom.int/match>; <https://belgium.iom.int/sites/belgium/files/Gallery/MATCH-Info-Sheet-EN-online.pdf>

Definitions and classifications of green jobs, occupations and skills

Table 5. Definitions of green jobs

ILO (2019, 2016)	Green jobs are decent jobs that contribute to preserving or restoring the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency. Green jobs help to improve efficiency in the use of energy and raw materials, limit GHG emissions, minimise waste and pollution, protect and restore ecosystems, and support adaptation to the effects of climate change.
UNEP, ILO, IOE, ITUC (2008)	Green jobs refer to “work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity, reduce energy, materials, and water consumption through high efficiency strategies, de-carbonise the economy, and minimise or altogether avoid generation of all forms of waste and pollution.”
Eurostat (2009)	Employment in the environmental goods and services sector refers to “employment in environmental enterprises but also in public administrations that are involved in the creation of environmental technologies, goods and services and the employment linked to ancillary activities in the various productive units.”
European Commission (EC) (2013: 8)	Green jobs are “covering all jobs that depend on the environment or are created, substituted, or redefined (in terms of skills sets, work methods, profiles generated, etc.) in the transition process towards a greener economy.”
United States' Bureau of Labour Services (BLS) (n.d.)	BLS uses an output and a process approach to define green jobs: (a) “jobs in business that produce goods or provide services that benefit the environment or conserve natural resources” and (b) “jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources.”

Source: Vidican Auktor, (2020).

Table 6. Example of green occupations by level of 'greenness'

	Greenness=1	0.5<Greenness<0.3	Greenness<0.3
Green Enhanced Occupations	Environmental Engineers, Environ Science Technicians, Hazardous Material Removers	Aerospace Engineers, Atmospheric and Space Scientist, Automotive Speciality Technicians, Roofers	Construction Workers, Maintenance & Repair Workers, Inspectors, Marketing Managers
New and Emerging Green Occupations	Wind Energy Engineers, Fuel Cell Technicians, Recycling Coordinators	Electrical Engineering Technologists, Biochemical Engineers, Supply Chain Managers, Precision Agriculture Technicians	Traditional Engineering Occupations, Transportation Planners, Compliance Managers

Source: Vona et al. (2015).

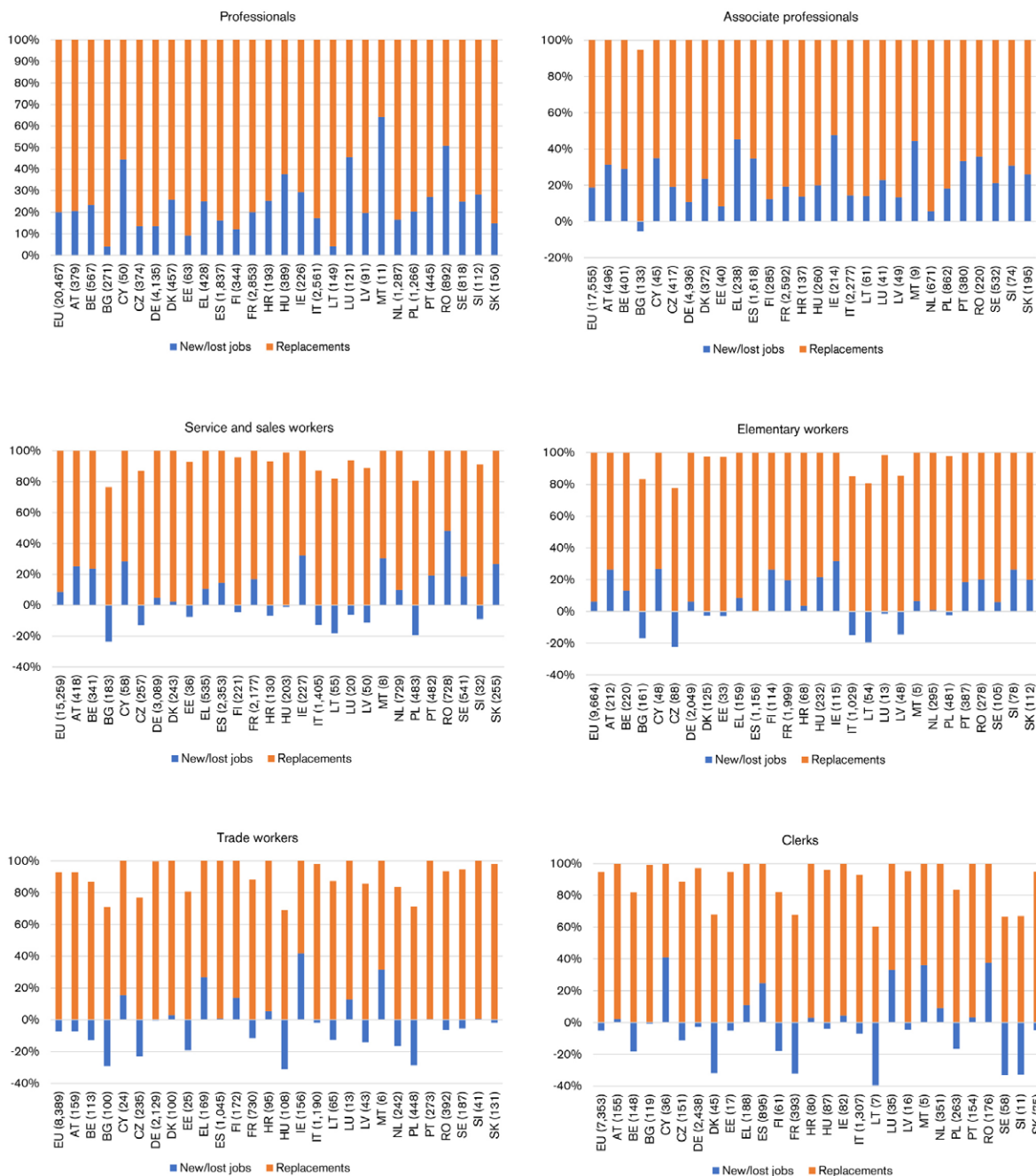
Table 7. Green Skills measures from O*NET

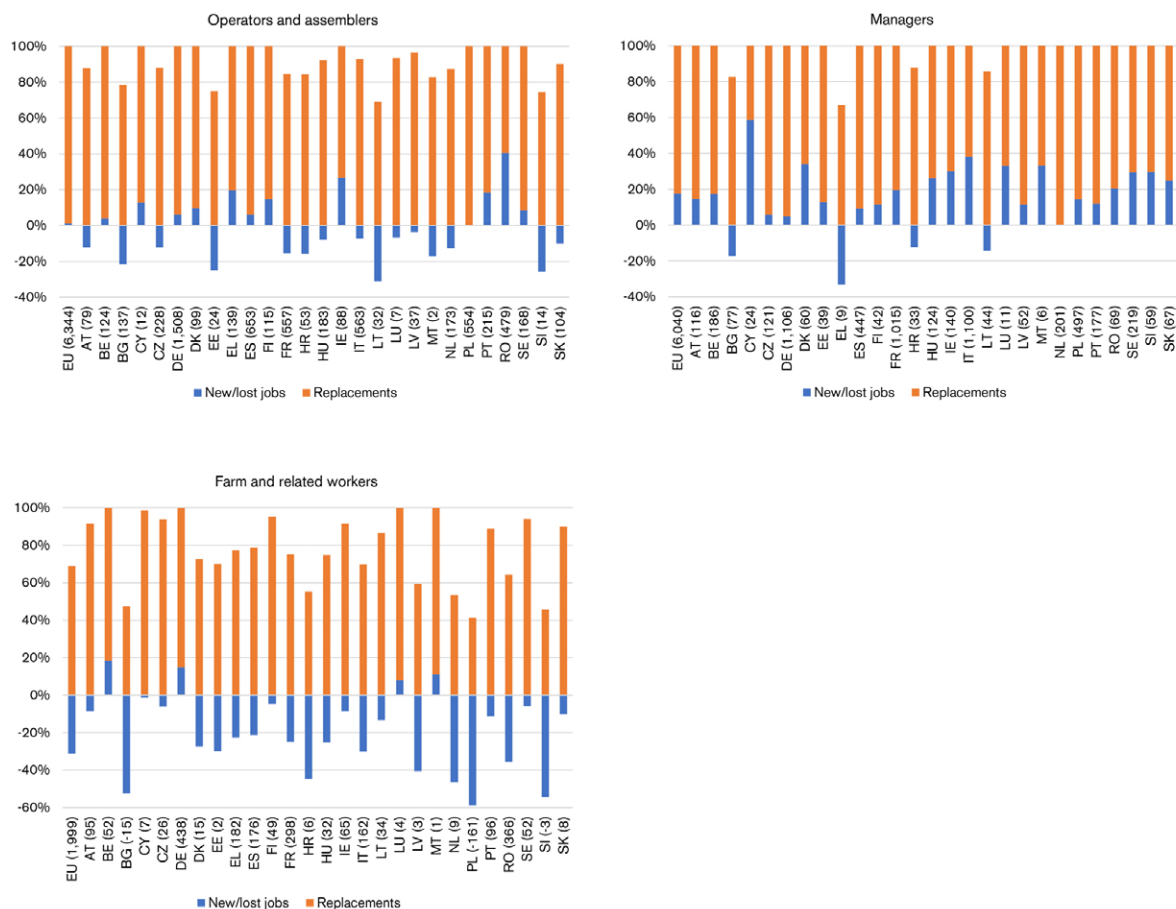
Engineering & Technical	
2C3b	Engineering and Technology
2C3c	Design
2C3d	Building and Construction
2C3e	Mechanical
4A3b2	Drafting, Laying Out, and Specifying Technical Devices, Parts, and Equipment
Science	
2C4b	Physics
2C4d	Biology
Operation Management	
2B4g	System Analysis
2B4h	Systems Evaluation
4A2b3	Updating and Using Relevant Knowledge
4A4b6	Provide Consultation and Advice to Others
Monitoring	
2C8b	Law and Government
4A2a3	Evaluating Information to Determine Compliance with Standards

Source: Vona et al. (2015).

Complementary figures

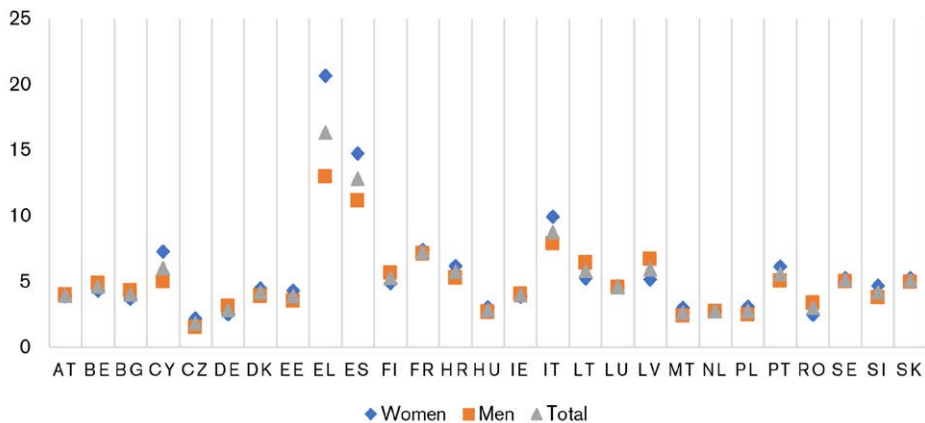
Figure 14. Job openings over the period 2020-2030, broken down by replacements and new/lost jobs. Thousands job openings reported in bracket for each country





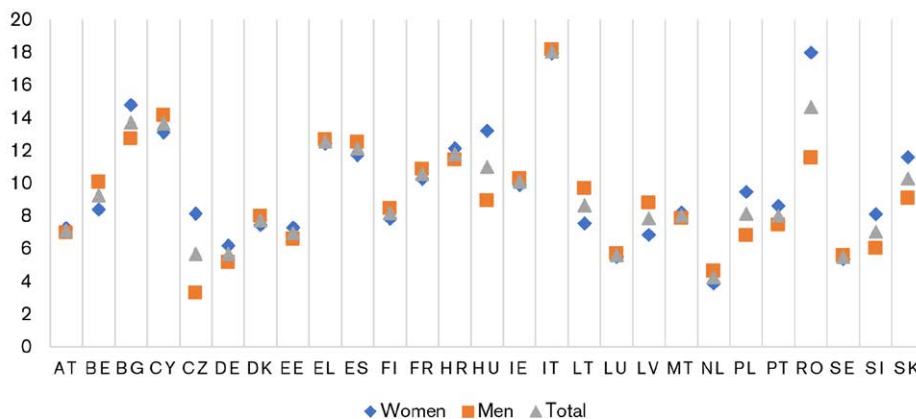
Source: Prepared by the author based on data from CEDEFOP - Skills Panorama.

Figure 15. Unemployment rate in EU27, 25+ 2019



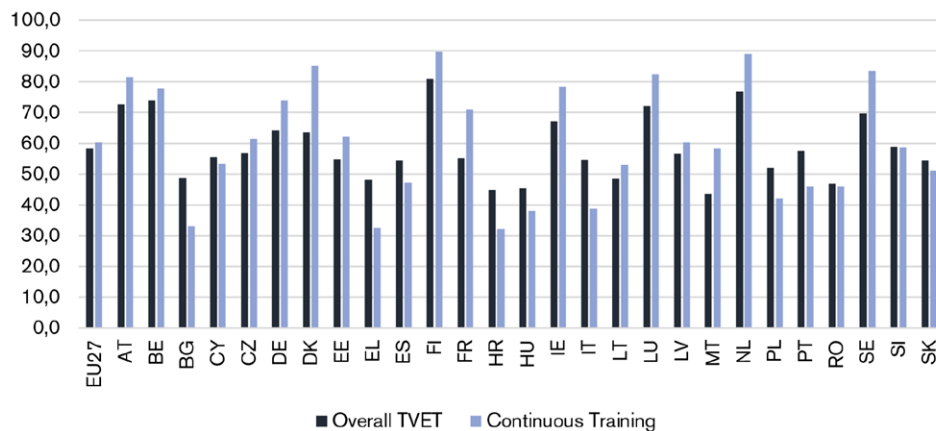
Source: Prepared by the author based on data from ILOSTAT.

Figure 16. Share of NEET in EU27, 15-24 2019



Source: Prepared by the author based on data from ILOSTAT.

Figure 17. Quality of TVET - Global Knowledge Index 2020, EU27



Source: Prepared by the author based on data from United Nations Development Programme (UNDP) and Mohammed Bin Rashid Al Maktoum Knowledge Foundation (MBRF).

Notes: Technical vocational education and training (TVET) is one of the six components of the Global Knowledge Index (GKI). Each major component of the GKI, as TVET, is built on other subcomponents at different levels, such as Continuous Training, which is part of the Formation and Professional Training subcomponent of TVET.

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List of acronyms and abbreviations



Acronyms

BILT	Bridging Innovation and Learning in TVET
CEDEFOP	European Centre for the Development of Vocational Training
EC	European Commission
ETF	European Training Foundation
EU	European Union
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GSP	Global Skill Partnership
HOMERe	High Opportunity for Mediterranean Executive Recruitment
ILO	International Labour Organization
IOM	International Organization for Migration
MPF	Mobility Partnership Facility
NEET	Not in Education, Employment, or Training
O*NET	Occupational Information Network
OECD	Organisation for Economic Co-operation and Development
PALIM	Pilot Project Addressing Labour Shortages through Innovative Labour Migration Models
PDO	Pre-departure orientation
PES	Public Employment Services
PPPs	Public-private partnerships
PV	photovoltaic
SD4GE II	Skills development for a green economy II
SKYE	Skills Development for Youth Employment
SMPs	Skills Mobility Partnerships
STEM	Science, technology, engineering, and mathematics
THAMM	Towards a Holistic Approach to Labour Migration Governance and labour Mobility in North Africa
TPs	Talent Partnerships
TVET	Technical and Vocational Education and Training
UN	United Nations
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
US	United States
VET	Vocational Education and Training

Countries abbreviations

Austria	AT
Belgium	BE
Bulgaria	BG
Croatia	HR
Cyprus	CY
Czechia	CZ
Denmark	DK
Estonia	EE
Finland	FI
France	FR
Germany	DE
Greece	EL
Hungary	HU
Ireland	IE
Italy	IT
Latvia	LV
Lithuania	LT
Luxembourg	LU
Malta	MT
Netherlands	NL
Poland	PL
Portugal	PT
Romania	RO
Slovakia	SK
Slovenia	SI
Spain	ES
Sweden	SE
Algeria	DZ
Egypt	EG
Jordan	JO
Lebanon	LB
Libya	LY
Morocco	MA
Tunisia	TN

eur@mesco

Policy Report

